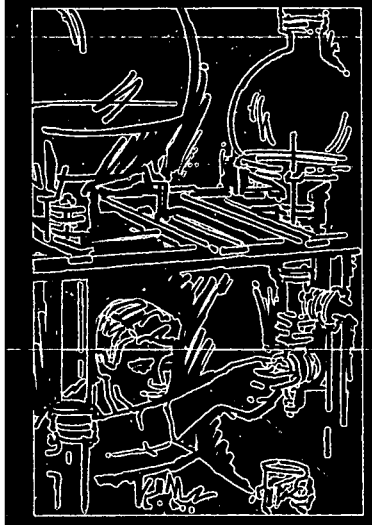
RETURN TO
BRITISH COLUMBIA
INSTITUTE OF TECHNOLOGY
3700 WILLINGDON AVENUE
BURNABY 2, B. C.

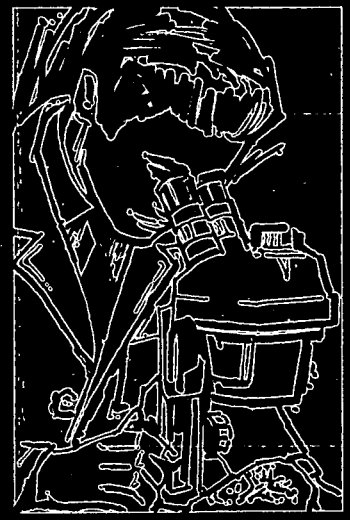
POSTES CANADA POSTAGE
23c
No. 5



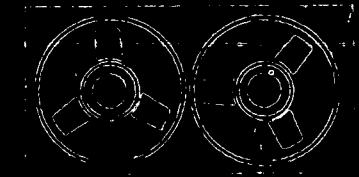



BCIT

BRITISH COLUMBIA INSTITUTE OF TECHNOLOGY



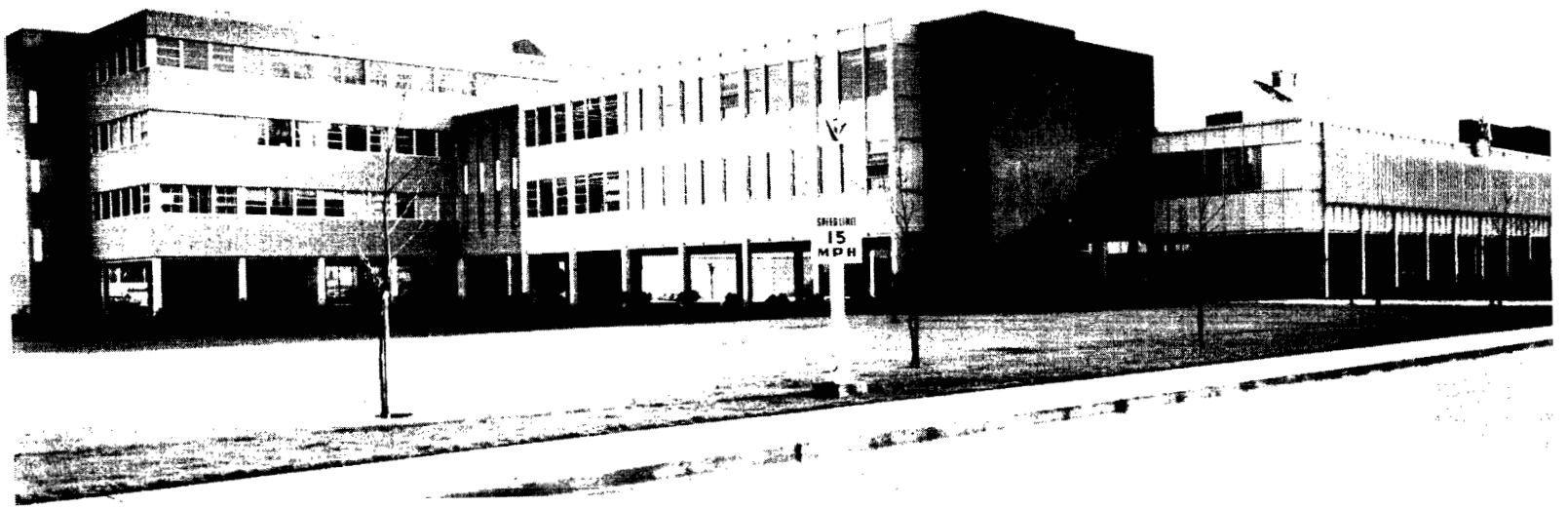


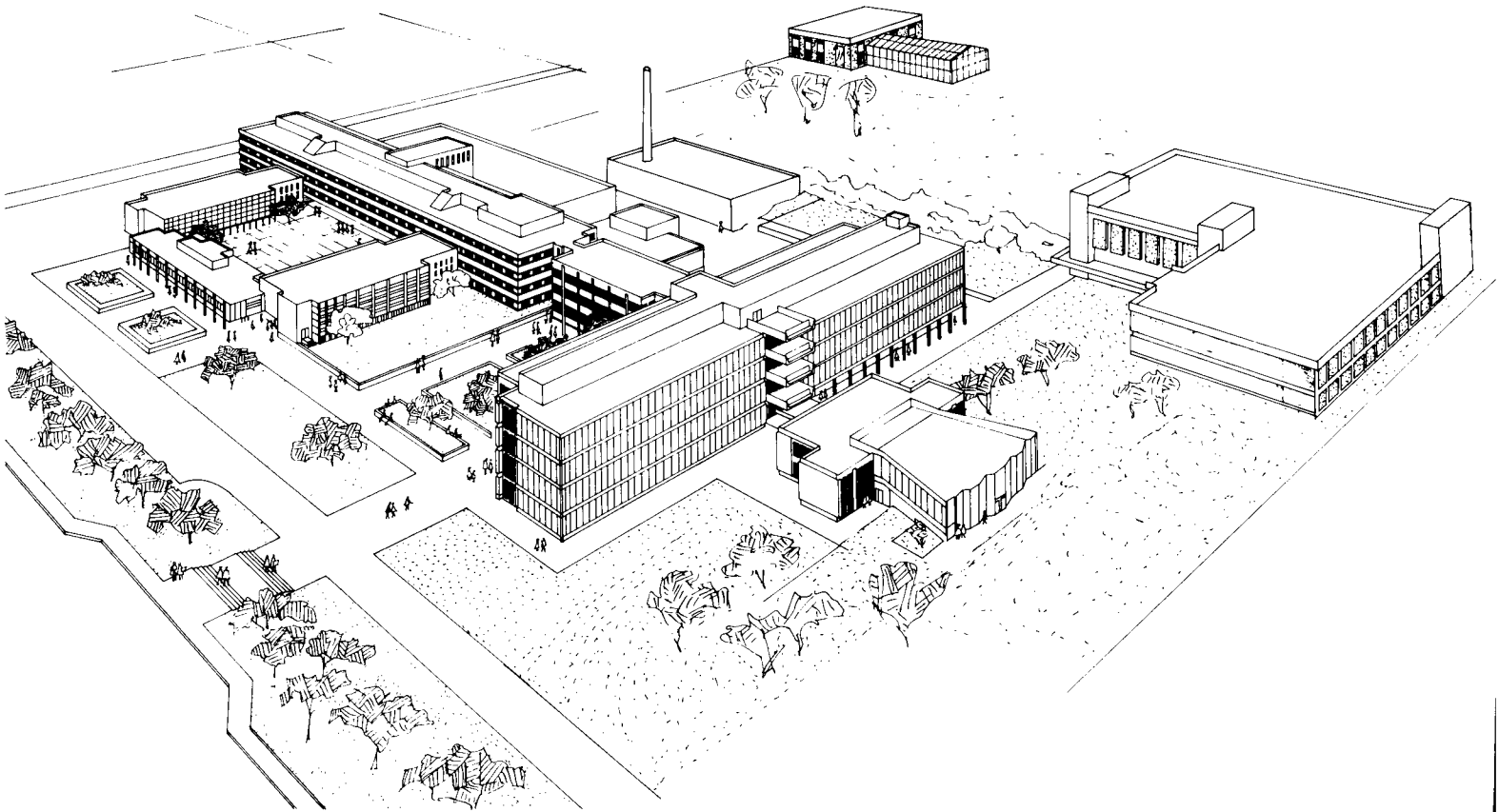


British Columbia Institute of Technology

3700 Willingdon Avenue
Burnaby 2, British Columbia
Telephone: 434-5722

Sponsored jointly by the Government of the Province of British Columbia and the Government of Canada.


SCHOOL
15
MPH



THE HONOURABLE DONALD LESLIE BROTHERS, Q.C., LL.B.
Minister of Education

G. NEIL PERRY, B.A., M.P.A., M.A., PH.D., LL.D.
Deputy Minister of Education

JOHN S. WHITE
Director of Technical and Vocational Education

Aims and Objectives

The British Columbia Institute of Technology, an institution for advanced technical education, is the first of its kind in British Columbia. Opened in 1964 under its first principal, Mr. E. C. Roper, it has already trained a large number who have established a fine reputation for the school by their work in industry as technicians or technologists.

The Institute offers a broad range of two-year technical programmes, each leading to a group of employment opportunities in the major industries of the Province. These programmes are a judicious blend of English, mathematics, the sciences, and very practical work related to the field of employment chosen by the student.

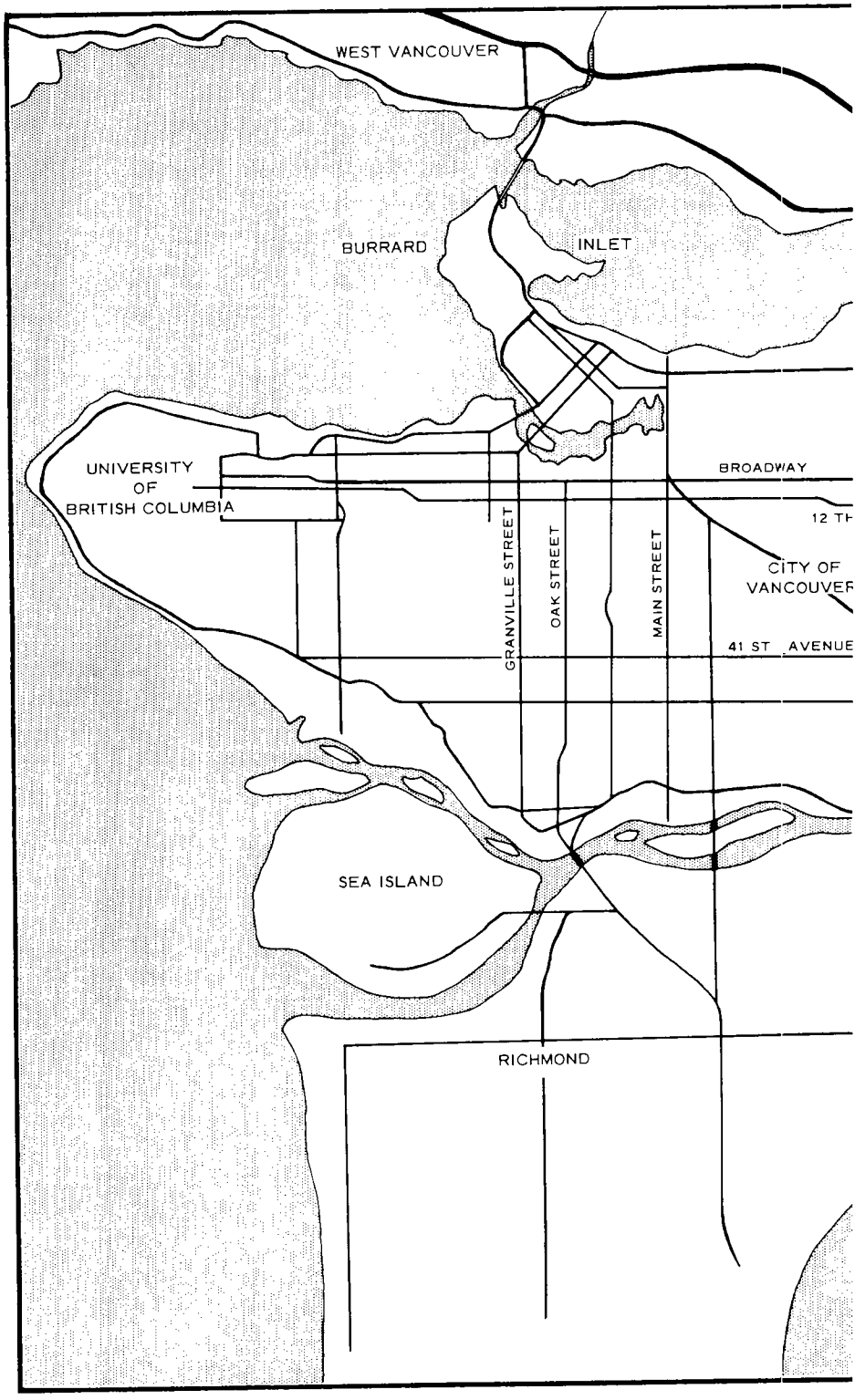
It is a prime aim of the Institute to serve the students as individuals. Many young graduates come directly from high school and are assisted to find their first jobs in industry. Others who have been out of school in industry for some time take advantage of these programmes to find new and more satisfying careers. It is becoming increasingly difficult for the individual to prepare himself for a career in our modern industrial society, and the Institute provides opportunities for training which open doors to suitable careers as technicians and technologists in the labour force.

The programmes of the Institute are designed to serve the industries of the region as well as the individual student. These programmes are established with the particular needs of the industries of the Province in mind. It is the aim of the Institute to produce graduates who, with additional experience, will fill many of the supervisory positions in business and industry.

B.C.I.T., therefore, helps the individual to prepare himself for a more productive and rewarding future and at the same time helps the industry of the region by supplying well-trained employees. And by helping both individual and industry to improve their productivity, the whole community is helped and the standard of living of all its members is improved.

D. H. GOARD, B.A..
Principal, British Columbia Institute of Technology

Table of Contents


WEST VANCOUVER
BURRARD
INLET
UNIVERSITY
OF
BRITISH COLUMBIA
BROADWAY
12 TH
GRANVILLE STREET
OAK STREET
MAIN STREET
CITY OF
VANCOUVER
41 ST AVENUE
SEA ISLAND
RICHMOND

NORTH VANCOUVER
HASTINGS ST.
PORT MOODY
THROUGHWAY
BRENTWOOD
SIMON FRASER
UNIVERSITY
THROUGHWAY
AVENUE
GRANDVIEW HWY.
LOUGHEED HWY.
COQUITLAM
BOUNDARY ROAD
WILLINGDON AVE.
TRANS CANADA HWY.
BURNABY
KINGSWAY
NEW WESTMINSTER
MARINE DRIVE
WILLINGDON AVENUE
STUDENT ENTRANCE
PARKING
BRITISH COLUMBIA
INSTITUTE OF
TECHNOLOGY
FOOD
TRAINING
CENTRE
TECHNICAL
BUILDING
THEATRE
LIBRARY
STUDENT PARKING
STUDENT PARKING
PLAYING FIELD

Administrative and Instructional Staff

ADMINISTRATION

D. H. GOARD, B.A. - - - - *Principal.*
J. C. MCADAM, B.A.SC., M.B.A., P.ENG. *Vice-Principal.*
G. THOM, B.COMM., M.B.A. - - - *Vice-Principal, Extension.*
J. T. FIELD, B.COMM. - - - - *Registrar.*
D. M. MACPHERSON, C.A. - - - *Bursar.*

ADMINISTRATIVE STAFF

R. S. CAREY, B.A., LL.B. - - - *Chairman, Technological Planning Committee.*
MRS. O. M. DOWNEY - - - - *Assistant to the Registrar.*
MRS. E. C. FENNER, P.H.N. - - *Nurse.*
J. G. FREBERG - - - - - *Head, Student Placement Centre.*
MISS M. A. GRAY, B.A. - - - *Counsellor.*
W. S. HUCKVALE, B.A., M.D., D.I.H. - *Physician.*
D. I. JONES - - - - - - *Assistant Bursar.*
G. W. KRUCIK, B.A.SC., P.ENG., C.D.P. *Data Processing Manager.*
G. H. LANGDALE, B.COMM., M.ED., M.A. *Co-ordinator of Student Affairs.*
G. N. LLOYD, B.SC. - - - - *Co-ordinator of Athletic Activities.*
T. B. LYTTLETON - - - - - *Acting Stores Supervisor.*
T. MILLAR - - - - - - *Bookstore Manager.*
W. A. ORR, B.SC. - - - - - *Assistant to the Chairman, Technological Planning Committee.*
J. I. PETTIGREW, R.N. - - - - *Nurse.*

INFORMATION RESOURCE CENTRE

R. HARRIS, B.A., B.L.S. - - - *Librarian.*
G. WEEKS, B.A., B.L.S. - - - *Assistant Librarian.*
S. RUSSELL, B.A., B.L.S. - - - *Catalogue Librarian.*
MRS. M. L. ALLINGHAM, B.A., B.L.S. - *Reference Librarian.*

INSTRUCTIONAL STAFF

Business Management Division

E. W. H. BROWN, B.A., *Director.*

ADMINISTRATIVE MANAGEMENT TECHNOLOGY

R. A. CRADOCK, B.COMM., M.B.A., R.I.A., *Department Head.*

G. BELL, B.COMM., M.A.
C. J. DICKHOFF, B.A., M.A.
G. T. HANRAHAN, LL.B.
L. E. JOHNSON, B.A.
J. L. MCPHEE, B.A.
R. C. MILLER, B.A., M.B.A.
D. A. PEPPER, B.A., P.G.(DIPL.)
C. R. RIOPEL, B.COMM., *Senior Instructor.*
W. D. SPROULE, B.COMM., C.A., R.I.(B.C.), F.R.I.
J. A. VERNER, B.A.SC., M.B.A.
F. C. WILLIAMS, B.A.(HONS.).

BROADCAST COMMUNICATIONS TECHNOLOGY

L. S. H. IRVINE, *Department Head.*

K. W. HUGHES.
M. C. HUGHES.
L. J. DAMER.
D. J. MCCOURT.
F. L. SANDERSON, *Senior Instructor.*
D. W. SHORT.

COMPUTER PROGRAMMING AND SYSTEMS TECHNOLOGY

D. Breckner, B.A.(Hons.), M.A.(Hons.), *Department Head.*

P. Abel, B.A.(Hons.), C.G.A.
J. W. Cooke, C.G.A., *Senior Instructor.*
A. Czernin.
K. E. Holden, R.I.A.
R. B. Long, C.G.A.
R. McGowen.
E. N. Newton, B.Voc.Ed.
M. Scriabin.
F. Senior, B.A.(Hons.), *Senior Instructor.*
A. Y. W. Wong, B.A.Sc.

FINANCIAL MANAGEMENT TECHNOLOGY

P. J. Woolley, B.A., M.A., C.A., *Department Head.*

Miss C. M. Briscall, B.Comm., M.B.A., R.I.A., *Chief Instructor.*
R. J. Dolan, B.B.A.
G. H. Farrell, Dipl.T.
R. W. Jackson, M.C.I.
E. C. McIntosh, B.Comm., C.G.A.
J. H. Nevison, B.A., B.Comm.
G. M. Weston, R.I.A.

HOTEL, MOTEL, AND FOOD SERVICE MANAGEMENT TECHNOLOGY

M. M. Coltman, C.G.A., *Department Head.*

R. Griffiths, Dipl.T.
J. G. Lindenlaub, *Chief Instructor.*
I. Lipovsky.
P. F. Renner, Dipl.T.

MARKETING MANAGEMENT TECHNOLOGY

G. H. Abbott, B.Comm., M.B.A., *Department Head.*

E. M. Iannacone, B.Comm., *Senior Instructor.*
G. T. Jacob, B.A.(Hist. & Econ.), B.A.(Bus. Admin.), M.B.A.
Mrs. D. Michaels, B.Sc., B.A.(Hons.).
E. T. Osborn, B.S.A., M.B.A., P.Ag.
L. W. Phillifant.
R. W. Vandermark, B.A.
Wm. A. E. Walley, B.A.

TECHNICAL MANAGEMENT TECHNOLOGY

C. N. MacKeown, B.A.Sc., P.Eng., *Department Head.*

F. L. Gruen, B.Mgt.Eng., *Senior Instructor.*
T. H. Hart.
A. S. Lee, B.Eng., P.Eng.
J. A. I. Millette, B.A.
R. M. Sharp, B.A.Sc., M.B.A., P.Eng.
L. A. Smith.
R. G. Smylie, B.A.Sc., P.Eng.
E. L. Toth, B.Sc.

Engineering Division

D. K. Bannerman, B.A.Sc., S.M., P.Eng., *Director.*

BIOLOGICAL SCIENCES TECHNOLOGY

R. B. Hyde, B.S.A., M.S., P.Ag., *Department Head.*

S. B. J. Andersen, B.A., *Senior Instructor.*
R. E. Carlyle, B.Sc., M.Sc., Ph.D., P.Ag., *Senior Instructor.*
R. N. E. Hargreaves, Dipl.T.
V. J. Martens, B.S.A.
J. H. Muir, B.S.A., P.Ag.
J. K. Soutter, H.D.F.T.
Miss J. F. Wylie, B.Sc.(Hons.).

BUILDING TECHNOLOGY

K. B. DAVISON, B.ARCH., F.R.A.I.C., *Department Head.*

G. BERKENPAS.
K. F. COLLIER, F.R.I.C.S., R.I.
G. M. HARDIE, A.R.I.C.S., R.I.
J. Y. JOHNSTONE, B.ARCH., M.R.A.I.C., *Senior Instructor.*
H. E. KUCKEIN.
D. S. MANN, B.ARCH., M.R.A.I.C.

CHEMICAL AND METALLURGICAL TECHNOLOGY

R. C. MASON, B.A.SC., B.C.L.ASS., *Department Head.*

W. J. BOGYO, B.C.L.ASS.
J. M. CURRIE, B.A.SC., P.ENG., *Senior Instructor.*
J. T. DENLEY, B.SC.
W. R. IRVINE, B.A., M.SC., P.ENG., *Senior Instructor.*
D. J. MCLEOD, A.R.M.T.C., A.I.M., T.T.T.C.
W. F. ROBERTS, B.A., B.A.SC., P.ENG.

CIVIL AND STRUCTURAL TECHNOLOGY

G. Q. LAKE, B.A.SC., P.ENG., *Department Head.*

A. R. BARREN, B.SC., PH.D., P.ENG.
R. BUTLER, C.ENG., P.ENG., M.I.C.E., M.I.STRUCT.E.
C. L. DOYLEND.
F. R. HOLE, B.A.SC., P.ENG.
F. G. KATZEL, B.SC., M.SC., P.ENG.
W. N. QUARRY, DIPL.T.
R. B. ROBINS, M.I.C.E., P.ENG.
R. C. STARR, B.ENG., M.A.SC., P.ENG., *Chief Instructor.*
A. T. WEBSTER, B.A.SC., D.I.C., P.ENG.

ELECTRICAL AND ELECTRONICS TECHNOLOGY

R. E. RIDSDALE, P.ENG., *Department Head.*

J. H. CASIMIR, B.A.SC., P.ENG.
A. K. CHU, B.A.SC., P.ENG.
E. I. GASPARD, C.E.T.
T. J. GLAVE, B.SC.(ENG.), A.C.G.I.
R. W. GUY.
E. G. HANCOCK, DIPL.T.
J. A. HOPKINS, *Senior Instructor.*
S. D. HUGHES, B.A.SC., P.ENG., *Chief Instructor.*
E. E. MCCONECHY, B.SC., *Chief Instructor.*
N. D. MISHRA, M.ENG., B.SC. (ENG.), M.SC., P.ENG.
W. F. MIKLAS, C.E.T.
E. A. MORSE, B.E.
A. R. MURDOCH, B.A.SC., P.ENG.
R. T. RUSSELL.
E. W. SCRATCHLEY, B.A.SC., M.A.SC., P.ENG., *Chief Instr.*
E. J. WARKENTIN, C.E.T.

FOREST RESOURCE TECHNOLOGY

V. HEATH, B.S.F., B.C.R.F., *Department Head* (on leave of absence, 1970).
G. R. HARRIS, B.A., M.A., *Acting Department Head, 1970.*

Forestry Programme

N. E. ALEXANDER.
G. BUCHAN, B.SC.F.
J. S. CALDWELL.
W. R. CANNON, B.A.
C. W. CHESTNUT, B.A.
F. C. CROSSIN, B.S.F., B.C.R.F., *Senior Instructor.*
J. A. CUTHBERT, B.S.F., *Senior Instructor.*
R. D. DUNLOP, B.A.SC., B.C.R.F., P.ENG.
A. B. FURNISS, B.S.F., M.F.
M. D. GODFREY, B.S.F.
D. C. HOLMES, B.A.SC., M.F., B.C.R.F., P.ENG., *Chief Instructor.*
A. G. JAKOY, B.S.F., M.F., B.C.R.F.
R. J. KERR.
K. K. LOEWE.
D. H. MACLAURIN, B.S.F., B.C.R.F.
W. D. MCLAREN, B.SC., M.SC.
D. G. MARSHALL, DIPL.T.
R. W. REISEN, E.T.I.
A. E. RICHMOND, B.S.F., M.F., B.C.R.F.
G. R. SCOTT, B.S.F.

S. BERGHOLD.
J. R. CAMPBELL, B.S.F.
C. A. COLLINS.
G. W. MITCHELL.

INSTRUMENTATION AND SYSTEMS TECHNOLOGY

J. O. HULBERT, M.I.C.E., P.ENG., *Department Head.*

E. H. V. BACK, DIPL.T.
T. W. COGHLAN, DIPL.T.
J. W. EVANSON.
J. G. KENYON.
D. J. SVETIC, B.A.SC., P.ENG.
E. A. UPWARD.

MECHANICAL TECHNOLOGY

E. J. CAIRNS, B.SC., C.ENG., A.F.R.AE.S., M.I.MECH.E., *Department Head.*

A. P. ADAMO, DIPL.T.
G. T. BENSON.
R. M. BROWN.
W. COOPER.
R. O. DARLING, B.SC., P.ENG.
A. HEZZLEWOOD, C.ENG., M.I.MECH.E.
B. E. HORLACHER, DIPL.T., *Senior Instructor.*
J. H. IRVINE.
G. D. JOHNSON, C.ENG., M.I.MECH.E., P.ENG., *Chief Instructor.*
K. JOHNSON.
R. B. PENNINGTON.
J. R. RABY, B.SC., M.S.E., P.ENG.
R. C. W. SMYTH, C.ENG., M.I.MECH.E., P.ENG., *Chief Instructor.*
S. C. TODD, H.N.C., M.I.E.D.

MINING TECHNOLOGY

A. H. MANIFOLD, B.SC., M.A.SC., P.ENG., *Acting Department Head.*
D. J. HARDIE, H.N.C.
J. A. WILLCOX, B.A.SC., P.ENG.

NATURAL GAS AND PETROLEUM TECHNOLOGY

I. M. ANDERSON, M.I.GASE., C.ENG., *Acting Department Head.*
D. A. CAMPBELL, B.A.(HONS.).
H. F. DU VARNEY

SURVEYING TECHNOLOGY

R. I. MCNEIL, B.SURV., B.C.L.S., D.L.S., *Acting Department Head.*

G. E. ANDERSON.
G. T. BEDWELL.
D. C. DEANS.
K. ERRINGTON, CERT. MIN. SURV.
K. FRANKICH, DIP.ENG.
K. GYSLER, B.ENG., D.L.S.
D. JARVOS, DIPL.T.
D. R. MASON, B.SC., B.C.L.S.
A. M. NELSON.
W. TUPPER, DIP.ENG.

Health Division

S. T. RICHARDS, *Director.*

DEPARTMENT OF BASIC HEALTH SCIENCES

D. W. MARTIN, B.SC.(HONS.), M.S.R., *Department Head.*

MISS B. M. CROCKER, B.S.N., R.N.
MISS M. E. DUVERNET, B.A.
MRS. M. L. FLANAGAN, B.SC., M.SC.
T. J. NOWAK, B.A.
MRS. J. M. SPENCE, B.A.
E. SHKURHAN, B.SC., M.SC., *Senior Instructor.*

DEPARTMENT OF ENVIRONMENTAL AND HEALTH ENGINEERING SERVICES

A. RIDGWAY, R.T., F.S.R., *Department Head.*

R. ANGELL, C.S.I.(C.).
F. BAUCK, *Senior Instructor.*
L. E. PENNER, C.S.I.(C.), *Chief Instructor.*
R. SCHARF.
MISS S. L. WILLIAMS, B.A.(HONS.), F.S.R.

DEPARTMENT OF MEDICAL LABORATORY SERVICES

MRS. M. J. BLAIR, B.A., A.R.T., *Department Head.*

MISS N. E. BRUCE, L.C.S.L.T.
MRS. G. M. CAMDEN, B.A., A.R.T., *Chief Instructor.*
MISS J. M. DEVETTE, B.SC.(HONS.), R.T., *Senior Instructor.*
MISS A. FRATER, B.SC., R.T.
MRS. H. M. GROVES, B.SC., R.T.
MRS. M. J. HARRIS, B.SC., R.T.
MRS. D. E. LIDDLE, R.T.
MRS. K. LOGAN, R.T.
MISS L. J. MARSHALL, A.R.T.
MISS G. S. MATHESON, R.T.
MRS. C. S. SEMMENS, B.SC., R.T.
MRS. A. J. STRIHA, A.R.T.
MISS E. A. WHITESIDE, B.A., R.T., *Senior Instructor.*

DEPARTMENT OF PATIENT CARE SERVICES

MRS. B. B. KOZIER, B.A., B.S.N., M.N., R.N., *Department Head.*

MRS. E. C. ARMSTRONG, B.N., R.N., DIPL.T.S.PSYCH.NRG.
MISS D. H. BARKER, R.N., DIPL.T.S., *Chief Instructor.*
MISS M. CHRISTIE, B.S.N., R.N.
MRS. J. DELESALLE, B.S.N., M.S.N., R.N.
MISS M. EVANS, S.R.N., S.C.M., DIPL.P.H.NRG., R.N.
MISS D. GILES, B.S.N., M.N., R.N.
MRS.V. HANKINSON, B.S.N., R.N.
MRS. J. JARVIS, B.S.N., R.N.
MISS L. KEMP, DIPL.N.ED., B.SC.N., R.N.
MRS. E. KERR, B.S.N., R.N.
MISS J. LARSBECK, B.N., R.N., DIPL. T.S.PSYCH.NRG., DIPL.PSYCH.NRG.
MISS L. MEREDITH, B.S.N., R.N.
MISS K. PETERS, B.S.N., R.N.
MISS M. RENWICK, B.S.N., R.N., DIPL.T.S., *Chief Instructor.*
MISS M. E. ROBERTSON, B.S.N., R.N., DIPL.N.N.NRG., *Senior Instructor.*
MISS S. SAUNDERS, B.N., R.N., DIPL.T.S.PSYCH.NRG.
MISS M. SEMADENI, B.S.N., R.N.
MISS S. STEPHENS, B.S.N., R.N.
MISS M. SUTHERLAND, B.N., C.M.B., R.N., DIPL.T.S.PSYCH.NRG.
MISS M. WEINS, B.SC., R.N.
MRS. L. WOODS, B.N.SC., R.N.

DEPARTMENT OF RADIOLOGICAL TECHNICAL SERVICES

W. E. NOEL, R.T., *Department Head.*

MISS B. CLARK, M.S.R., R.T., *Senior Instructor.*
MISS P. E. GODLEY, R.T.
MRS. R. GRAY, R.T.
MISS A. MACMILLEN, R.T.
MRS. S. G. WILLIAMS, R.T.
MISS P. M. ROGERS, R.T., *Chief Instructor.*
MISS N. SMITH, B.A., R.T.
R. J. SMITH, M.S.R., R.T.

Departments

CHEMISTRY

C. BARNETSON, B.SC., *Department Head.*

N. ABDURAHMAN, B.SC., M.SC., PH.D.
G. C. ANDERSON, A.I.S.T.(U.K.), *Senior Instructor.*
D. W. CONDER, B.SC., M.SC.
M. LESLIE KAN, B.SC., M.SC., P.DT.
C. J. C. NICHOL, B.A., M.SC., PH.D., *Senior Instructor.*
W. D. ROBERTSON, B.ED., *Senior Instructor*
E. E. TANG, B.SC.
L. V. TOLANI, B.SC.
P. W. VAN AMEYDE, H.L.S.(NETH.), IR.N.I.R.I.A.

ENGLISH

P. E. F. COLEMAN, B.A., M.A., *Department Head* (on leave of absence, 1970).
K. BRAMBLEBY, B.A., *Acting Department Head, 1970.*

D. BEATTIE, B.A., M.A.
P. J. BURNS, B.A.
F. C. H. CHALLANS, B.A.
N. K. CHIPPINDALE, B.SC., *Senior Instructor.*
C. A. CUMMINGS, B.A.
S. F. CUMMINGS, B.A., M.A.
O. D. ERICKSON, B.A.
B. J. H. HORAN, B.JOURN., B.A.,
R. KNOTT, B.A.
W. T. ROBINSON, B.A., B.SC.(ED.), M.A. *Senior Instructor.*
F. J. SABINE, B.A., M.A.
MRS. E. E. STRONACH, B.A., B.ED., M.A.
P. H. THOMAS, B.A., B.ED., M.A.

MATHEMATICS

W. S. SIMS, B.SC., *Department Head.*

J. W. BROWN, B.SC.(HONS.).
C. A. COPPING, B.SC.
M. DEKKER, B.SC.(HONS.), H.T.S.
W. A. ELLINGSEN, B.SC.
P. M. HOBBINS, B.SC.
R. D. LYNN, B.SC.(HONS.).
A. D. MARTIN, B.SC.(HONS.), M.A.SC.
E. R. MARTIN, B.SC.
E. R. MCGUIRE, B.SC., M.ED., *Senior Instructor.*
A. P. PARIS, B.A.SC., M.A.SC., P.ENG., *Senior Instructor.*
R. A. STERNE, B.A.SC., P.ENG., *Senior Instructor.*
B. L. TURNER, B.SC.
H. E. WALKER, B.A.
J. H. WARDROPER, B.SC.(ENG.), M.SC., M.I.C.E., P.ENG.

PHYSICS

F. READER, B.A.SC., P.ENG., *Department Head.*

C. BITSAKIS, B.SC.
G. R. HARLAND, DIPL.T.
D. E. A. KENYON, B.SC., *Senior Instructor.*
A. KSHATRIYA, B.SC., M.SC., *Senior Instructor.*
W. MALAKOFF, B.SC., B.ED., M.SC.
MRS. R. MCARTHUR, B.SC.(HONS.).
W. V. OLSON, B.SC., *Senior Instructor.*
R. H. PARKER, B.SC.
J. R. SAUNDERS, B.SC.
D. E. THOM, B.SC.
A. B. L. WHITTLES, B.SC., M.SC., PH.D.
K. A. YAKEL, B.SC., M.SC.

PART-TIME INSTRUCTIONAL STAFF, 1970–71

Name	Technology
A. M. BELL	*Business Management.*
J. G. BROWN, B.SC., AGR.(COM.)	*Business Management.*
R. EVANS	*Forest Resource.*
MRS. G. M. GRIFFITHS, B.A.SC., M.A.	*Physics.*
R. A. JONES	*Forest Resource.*
J. MACD. LECKY, B.A.	*Business Management.*
MRS. L. MACDONALD, R.T.	*Medical Laboratory.*
MITCHELL, J.	*Hotel, Motel, and Food Service Management.*
M. PIEROTTI	*Business Management.*
P. S. QUELCH	*Forest Resource.*
J. W. RAVEN	*Forest Resource.*
MRS. J. RECHE	*Hotel, Motel, and Food Service Management.*
D. W. RENNIE	*Forest Resource.*
R. R. SANDERSON	*Forest Resource.*
MRS. E. M. S. SINCLAIR, A.I.M.L.T.	*Medical Laboratory.*
K. P. H. STIRLING, B.SC., PH.D., F.C.I.C., P.ENG., A.INST.P., A.INST.M., A.C.A.P., S.M.I.E.E., S.M.I.S.A.	*Public Health.*
J. P. SULLIVAN, B.SC., P.ENG.	*Building.*
A. TAKACS, B.SC.	*Chemical and Metallurgical.*
C. A. TIERS, B.ARCH., M.ARCH., M.R.A.I.C.	*Building.*
MRS. J. B. WARREN, B.A., M.A.	*Physics.*
R. WILLINGTON, B.S.F.	*Forest Resource.*
F. M. WILSON	*Business Management.*

Guest Lecturers

Name	Technology
D. ABRAHAMSON	*Business Management.*
J. R. ADAMS, M.SC., PH.D.	*Medical Laboratory.*
A. AITKEN	*Forest Resource.*
F. ALCOCK, C.S.I.(C.)	*Public Health.*
I. V. F. ALLEN	*Forest Resource.*
W. M. ALLISON	*Forest Resource.*
C. ANDERSON, B.S.F., M.F., P.ENG.	*Forest Resource.*
MISS B. L. ARCHIBALD, B.SC., R.T.	*Nuclear Medicine.*
W. G. BEALE, P.ENG.	*Forest Resource.*
A. K. G. BLAKENEY, B.A.SC., P.ENG.	*Forest Resource.*
P. BOLTER	*Business Management.*
A. BOTHAMLY	*Business Management.*
K. G. BOYD, B.S.F.	*Forest Resource.*
F. C. BOYD, B.A.	*Forest Resource.*
G. BRAMHALL, B.A.SC., M.F.	*Forest Resource.*
R. E. BREADON, B.S.F., B.C.R.F.	*Forest Resource.*
D. T. BROWN	*Forest Resource.*
R. L. CAESAR, B.S.F., B.C.R.F.	*Forest Resource.*
B. CAINE, B.SC., M.A.SC., P.ENG.	*Public Health.*
A. CAMERON, B.S.F., B.C.R.F., P.ENG.	*Forest Resource.*
J. M. CAMERON, B.A.	*Business Management.*
J. CAMPBELL	*Business Management.*
J. F. T. CARREIRO, B.A.	*Forest Resource.*
D. S. CATTON	*Business Management.*
W. H. CHILDRESS	*Mining.*
R. D. CHRISTIE	*Forest Resource.*
W. H. COCKROFT, PH.D.	*Medical Laboratory.*
A. COE	*Business Management.*
J. COMRIE	*Business Management.*
D. C. COOK, B.COMM.	*Business Management.*
G. E. CRAGG, M.D.	*Nursing.*
P. R. CULAS, B.COMM., M.B.A.	*Business Management.*
C. F. A. CULLING, F.I.M.L.T., F.R.M.S.	*Medical Laboratory.*
L. DAVIS, B.COMM.	*Business Management.*
T. N. DAWSON	*Mining.*
C. M. DEFIEUX	*Business Management.*
P. O. DOBSON, B.S.F., M.B.A.	*Forest Resource.*
P. DOOLING	*Forest Resource.*
S. ELIAS	*Mining.*
F. B. ESTABROOKS	*Business Management.*
A. M. EYRE, B.A.SC.	*Business Management.*
R. W. FARMER, C.A.	*Business Management.*
W. M. FERRIE, B.COMM.	*Business Management.*
F. FLEMING	*Business Management.*
J. R. FORD	*Medical Radiography.*
P. FORWARD, B.COMM.	*Business Management.*
W. T. FRASER	*Business Management.*
B. R. GATES, B.SC., M.SC.	*Forest Resource.*
A. S. J. GIBB	*Forest Resource.*
W. J. GLAZIER, R.I.A.	*Forest Resource.*
T. GODFREY	*Mining.*
J. GOTHE	*Business Management.*
J. L. GROVE	*Business Management.*
W. V. HANCOCK, B.SC., M.F., PH.D.	*Forest Resource.*

Name	Technology
R. D. HARRIS, B.A.	*Forest Resource.*
A. HEDLIN, B.SC., PH.D.	*Forest Resource.*
R. HENNESSEY	*Business Management.*
R. G. HERBERT, D.F.C., C.D., B.A., LL.B.	*Business Management.*
A. HETHERINGTON	*Forest Resource.*
D. E. HEWITT	*Forest Resource.*
L. HIEBERT, C.S.I.(C.)	*Public Health.*
W. F. HOBDEN, P.ENG.	*Forest Resource.*
J. E. HOEGG, B.SC., M.B.A.	*Business Management.*
G. HOLMES	*Forest Resource.*
J. W. IBBOTT, B.A., M.D., C.M., F.R.C.P.(C.)	*Medical Laboratory.*
S. ISRAELS, B.SC., M.D., F.R.C.P.(C.)	*Medical Laboratory.*
W. H. JAY, B.S.S., M.COMM.	*Business Management.*
L. JOHNSTONE	*Forest Resource.*
K. R. JOY	*Forest Resource.*
J. K. KELLY, B.S.F.	*Forest Resource.*
G. KERN	*Business Management.*
J. KILBY	*Forest Resource.*
D. A. KING, A.M.I., PRD.E., A.I.I.E., A.I.W.S.	*Business Management.*
M. A. KIRK, B.A.	*Public Health.*
E. KNIGHT, B.S.F.	*Forest Resource.*
P. KRALL	*Forest Resource.*
C. M. LAMOND	*Forest Resource.*
H. LENKO, B.S.F.	*Forest Resource.*
K. J. LUCAS	*Business Management.*
A. J. LYNCH, B.SC., M.P.H.	*Public Health.*
W. B. MACKAY, CHEM.ENG.	*Forest Resource.*
D. L. MACMURCHIE	*Forest Resource.*
G. F. MACNAB, B.S.F.	*Forest Resource.*
I. MCFALL	*Forest Resource.*
J. A. MCINTOSH, B.SC.F., B.C.R.F.	*Forest Resource.*
J. H. MCKEE	*Business Management.*
R. J. MCKERCHER, B.COMM., B.S.F.	*Forest Resource.*
B. S. MADSEN, P.ENG.	*Forest Resource.*
P. C. MAGUIRE	*Mining.*
G. E. MANNING, B.COMM.	*Business Management.*
R. MEAD, PH.D.	*Forest Resource.*
P. MILLER, B.SC.ENG., M.B.A.	*Business Management.*
W. A. MORRIS, B.A., M.S.	*Forest Resource.*
R. T. MORRISON, M.D., PH.D.	*Nuclear Medicine.*
G. G. MOSS	*Business Management.*
J. D. MUNROE, M.D., D.P.H., C.R.C.P.(C.)	*Public Health and Medical Laboratory.*
S. NAIMAN, M.D., F.R.C.P.(C.)	*Medical Laboratory.*
J. D. NEWTON, B.SC., M.SC., PH.D.	*Biological Sciences.*
R. W. PARK, C.A.	*Business Management.*
J. W. PECK, B.SC.	*Mining.*
E. PEKRUL	*Biological Sciences.*
R. PELLAND	*Forest Resource.*
W. C. PENDRAY, B.S.A.	*Forest Resource.*
R. A. POLLOCK	*Mining.*
R. W. PURVES	*Business Management.*

Name	Technology
J. W. Raven	*Forest Resource.*
M. B. Ray	*Business Management.*
D. J. J. Robert	*Business Management.*
T. Robertson	*Mining.*
W. Robinson, B.A.Sc.	*Mining.*
A. Ross	*Mining.*
J. Ross, M.Sc.	*Forest Resource.*
R. Savage, B.Comm.	*Forest Resource.*
D. O. L. Schon, B.S.F., B.C.R.F.	*Forest Resource.*
R. G. Scott, C.S.I.(C.)	*Public Health.*
W. G. Sharpe, B.S.F.	*Forest Resource.*
R. Sheill	*Business Management.*
A. Smart	*Business Management.*
J. H. Smith, M.B., Ch.B., B.A.O., D.P.H., D.I.H.	*Public Health.*
D. South, B.A., M.T.P.I.C.,	*Public Health.*
T. Stevens, B.S.F.	*Forest Resource.*
R. T. Stewart, B.Comm.	*Business Management.*
S. N. Stordy, B.A., M.D., C.M., F.R.C.P.(C.)	*Medical Laboratory.*
J. H. Sturdy, M.D., C.R.C.P.(C.), M.C.Path.	*Medical Laboratory.*
A. Sykanda, B.Sc.	*Public Health.*
G. Szasz, M.D.	*Nursing.*
H. Taylor	*Mining.*
E. W. Taylor, B.A., M.A.	*Forest Resource.*
G. Theobald	*Business Management.*
J. G. Thiele, B.Comm.	*Business Management.*
R. Tulk, B.Comm., C.A.	*Business Management.*
W. R. Tutton, B.A.Sc., P.Eng.	*Biological Sciences.*
D. W. Walser	*Forest Resource.*
M. B. Walters, M.D., F.R.C.P.(C.), F.A.C.P., F.A.C.C.	*Medical Laboratory.*
R. Watson	*Business Management.*
W. B. Watt, B.A.	*Business Management.*
F. R. Werts	*Business Management.*
I. H. Williams, B.Sc., M.S.	*Biological Sciences.*
J. Williams	*Business Management.*
R. Willington, B.S.F.	*Forest Resource.*
Ann J. Worth, M.D., F.R.C.P.(C.)	*Medical Laboratory.*

CORPORATE GUEST LECTURERS

Anaconda Britannia Mines	*Staff.*
Atlas Copco Canada Ltd.	*Staff.*
Bethlehem Copper Corporation Ltd.	*Staff.*
Canadian Ingersoll Rand Ltd.	*Staff.*
Gardiner-Denver Canada Ltd.	*Staff.*
Craigmont Mines Ltd.	*Staff.*
Finning Tractor & Equipment Ltd.	*Staff.*
Giant Mascot Mines Ltd.	*Staff.*
Inspiration Drilling (Div. of Inspiration Ltd.)	*Staff.*
Nelson Machinery Ltd.	*Staff.*
Vancouver Wharves Ltd.	*Staff.*
Wire Rope Industries of Canada Ltd.	*Staff.*

Advisory Council and Advisory Committees

ADVISORY COUNCIL

Chairman:

G. N. PERRY, B.A., M.P.A., M.A., PH.D., Deputy Minister of Education, Victoria.

Vice-Chairman:

J. S. WHITE, Director of Technical and Vocational Training, Department of Education, Victoria.

Principal:

D. H. GOARD, B.A., Principal, British Columbia Institute of Technology, Burnaby.

Members:

N. H. ABRAMSON, B.A., General Manager, Western Region, Hudson's Bay Company (retired).

W. M. ARMSTRONG, B.A.Sc., P.ENG., Deputy President, University of British Columbia, Vancouver.

W. O. BANFIELD, M.A.Sc., Past-President, British Columbia Hospitals Association.

R. S. CAREY, B.A., LL.B., Chairman of the Technological Planning Committee, British Columbia Institute of Technology, Burnaby.

G. R. F. ELLIOTT, M.D., C.M., D.P.H., C.R.C.P.(C.), Assistant Deputy Minister of Health, Bureau of Special Health Services, Vancouver.

R. R. HAERING, B.A., M.A., PH.D., Professor, Department of Physics, Simon Fraser University, Burnaby.

T. F. HEENAN, B.A.Sc., Vice-President, Staff (Operations), British Columbia Telephone Company, Vancouver.

S. A. JENNINGS, B.A., M.A., PH.D., Head, Mathematics Department, University of Victoria, Victoria.

D. C. LAMBERT, B.A.Sc., P.ENG., Contracts Administrator, Lenkurt Electric Co. of Canada, Burnaby.

J. C. MCADAM, B.Sc., M.B.A., P.ENG., Vice-Principal, British Columbia Institute of Technology, Burnaby.

R. C. MACDONALD, B.Sc., M.A.Sc., Regional Geologist, New Jersey Zinc Exploration Company (Canada) Ltd., Vancouver.

G. R. MCMEEKIN, B.A.Sc., P.ENG., Administrative Assistant, Cominco Ltd., Trail.

R. F. PATTERSON, B.A.Sc., M.A.Sc., PH.D., General Manager, Pulp Production, Canadian Forest Products Ltd., Vancouver.

J. H. STEEDE, B.A.Sc., P.ENG., Executive Director, British Columbia Hydro and Power Authority, Vancouver.

G. A. THOM, B.COMM., M.B.A., Vice-Principal, Extension Division, British Columbia Institute of Technology, Burnaby.

DR. D. H. WILLIAMS, M.D., Associate Dean, Office of the Dean, Faculty of Medicine, University of British Columbia, Vancouver.

Resource Personnel:

A. J. BROOME, Administrative Assistant, Technical and Vocational Training, Department of Education, Victoria.

S. E. ESPLEY, Comptroller of Expenditure, Department of Education, Victoria.

F. P. LEVIRS, B.A., M.A., M.S.(ED.), Superintendent of Education, Department of Education, Victoria.

J. R. MEREDITH, B.A., M.ED., Assistant Superintendent, Instructional Services, Department of Education, Victoria.
V. E. RICKARD, B.ED., Assistant Director, Technical and Vocational Training, Department of Education, Victoria.
A. E. WEBB, Deputy Minister of Public Works, Victoria.

ADMINISTRATIVE MANAGEMENT

ADMINISTRATIVE OPTION ADVISORY COMMITTEE

Chairman:

J. E. HOEGG, President, Grouse Mountain Resorts Ltd., 1030 West Georgia Street, Vancouver.

Ex Officio:

E. W. H. Brown, Director, Business Management Division, British Columbia Institute of Technology, Burnaby.
R. A. CRADOCK, Department Head, Administrative Management Technology, British Columbia Institute of Technology, Burnaby.

Members:

E. BENSON, General Manager, Pacific Press Ltd., Vancouver.
R. G. BENTALL, Vice-President, Dominion Construction Co. Ltd., Vancouver.
W. L. DAVIS, Personnel Manager, Eaton's Vancouver.
R. H. DOWNEY, Manager, Manpower and Organization Planning, British Columbia Hydro and Power Authority, Vancouver.
N. J. GRYCAN, Administrative Manager, Bank of Montreal, Vancouver.
H. E. HENDER, Director of Personnel, Finning Tractor and Equipment Ltd., Vancouver.
H. MAIN, Vice-President, C.P. Air, Vancouver.
G. W. POWELL (Alumni Rep.), Assistant Manager, Kerrisdale Cameras, Vancouver.
F. WATERS (Administrative Management Society, Director of Education Representative), Business Systems Co-ordinator, British Columbia Telephone Co., Vancouver.
J. B. WYNN, Personnel Manager, Woodward Stores Ltd., Vancouver.

ECONOMICS AND STATISTICS OPTION ADVISORY COMMITTEE

Chairman:

JOHN NAIRN, Manager, Marketing Research and Statistics Department, British Columbia Hydro and Power Authority, Vancouver.

Ex Officio:

E. W. H. BROWN, Director, Business Management Division, British Columbia Institute of Technology, Burnaby.
R. A. CRADOCK, Department Head, Administrative Management Technology, British Columbia Institute of Technology, Burnaby.
C. R. RIOPEL, Senior Instructor, Administrative Management Technology, British Columbia Institute of Technology, Burnaby.

Members:

ROBIN BURNS, Assistant Regional Economist, Pacific Region, Department of Manpower and Immigration, Vancouver.

ALLAN COE, Manager, Sales Development, Finning Tractor and Equipment Co. Ltd., Vancouver.

PETER R. CULOS, Director of Marketing, Nabob Foods Ltd., Vancouver.

DR. ROBERT H. DONNELLY, Manager, Operations Research Department, MacMillan Bloedel Limited, Vancouver.

ALLAN B. EVERS, Research and Development Supervisor, British Columbia Telephone Company, Vancouver.

PETER C. FORWARD, President, Regional Marketing Surveys Ltd., Vancouver.

ROBERT KINCAID, Regional Director, Dominion Bureau of Statistics, Vancouver Region.

TOIVO LAANEMAE, Manager, Market Research, Paper Products Division, Crown Zellerbach Canada Limited, Richmond.

J. R. MEREDITH, Director, Bureau of Economics and Statistics, Department of Industry, Trade, and Commerce, Victoria.

RICHARD ROBERTS, Assistant Chief Economist, Pacific Area, Department of Fisheries, Vancouver.

DAVID W. ROSS, Vice-President, Hedlin Menzies and Associates Ltd., Vancouver.

MANPOWER MANAGEMENT OPTION ADVISORY COMMITTEE

Chairman:

D. CAMPBELL, Personnel Manager, British Columbia Telephone Company, Vancouver.

Ex Officio:

E. W. H. BROWN, Director, Business Management Division, British Columbia Institute of Technology, Burnaby.

R. A. CRADOCK, Department Head, Administrative Management Technology, British Columbia Institute of Technology, Burnaby.

Members:

R. M. BIBBS, Vice-President, Industrial Relations, MacMillan Bloedel Ltd., Vancouver.

DR. L. CHECOV, President, Management Development Associate Ltd., Vancouver.

J. S. DON, Director of Personnel Services, City of Vancouver, Vancouver.

W. M. FERRIE, Director of Personnel, Scott Paper Limited, New Westminster.

M. A. HAMBLY, Manager, Department of Manpower and Immigration, Metropolitan Office, Vancouver.

MRS. J. HAMMOND, Sales Supervisor, Office Overload Co. Ltd., Vancouver.

R. C. HAYNES, Secretary-Treasurer, British Columbia Federation of Labour.

R. D. HIGGINS, Chief Classification Officer, Civil Service Commission, Victoria.

DR. L. MOORE, Faculty of Commerce and Business Administration, University of British Columbia, Vancouver.

W. ROBERTSON, Personnel Manager, Pacific Press Ltd., Vancouver.

S. J. ROBINSON, Personnel Manager, Kelly Douglas & Co. Ltd., Burnaby.

G. TAYLOR, Training Development Manager, Crown Zellerbach Canada Ltd., Vancouver.

G. S. WILSON (Alumni Rep.), Manager of Mining Services, Quest Services, Vancouver.

BROADCAST COMMUNICATIONS ADVISORY COMMITTEE

Chairman:

W. C. ELLIOTT, Vice-President, Production, British Columbia Television Broadcasting System, Ltd., Burnaby.

Ex Officio:

E. W. H. BROWN, Director, Business Management Division, British Columbia Institute of Technology, Burnaby.

L. S. H. IRVINE, Department Head, Broadcast Communications, British Columbia Institute of Technology, Burnaby.

Members:

B. A. ANTONSON (Alumni Rep.), Production Assistant, Radio Station CKNW, New Westminster.

D. BARKMAN, President and General Manager, CHWK, Chilliwack.

S. W. DAVIS, Technical Supervisor, Radio Stations CKVN, CHQM, CKWX, Vancouver.

J. D. EELTON, General Manager, Radio Station, CKWX, Vancouver.

W. HUGHES, General Manager, Radio Station CKNW, New Westminster.

K. R. HUTCHESON, President, Radio Station CJAV Ltd., Port Alberni.

H. M. PALMER, Director of Television, Canadian Broadcasting Corporation, Vancouver.

R. W. SERVICE, Executive Producer, Film, Canadian Broadcasting Corporation, Vancouver.

R. SHARPE, Sales Manager, CHBC-TV, Kelowna.

BUILDING ADVISORY COMMITTEE

Chairman:

J. L. WHITEHEAD, President and Publisher, Journal of Commerce, Vancouver.

Ex Officio:

D. K. BANNERMAN, Director, Engineering Division, British Columbia Institute of Technology, Burnaby.

K. B. DAVISON, Head, Building Technology, British Columbia Institute of Technology, Burnaby.

Members:

W. H. BALL, National Research Council, Division of Building Research, University of British Columbia, Vancouver.

D. M. BROUSSON, President, Century Sales Ltd., Vancouver.

J. SHUMIATCHER, Fabtec Structures Ltd., North Vancouver.

P. CHRISTOFFERSEN, Partner, Read, Jones, Christoffersen, Vancouver.

G. COCKROFT, Industrial Education Instructor, Ladner.

M. J. JONES, Chief Building Inspector, Corporation of the District of Burnaby, Burnaby.

R. KINNEARD, Kinneard Management Services Ltd., Vancouver.

A. K. KIRK-GEROW, A. W. McLeod Realty, New Westminster.

D. B. LEANEY, Partner, D. W. Thomson & Co. Ltd., Vancouver.

J. A. MERCHANT, Personnel Manager, Swan Wooster Engineering Co. Ltd., Vancouver.

B. P. PARRY, Building Technologist, McCarter, Nairne & Partners, Vancouver.

H. PENNY, Director of Education and Safety, Amalgamated Construction Association, Vancouver.
B. T. H. RICE, Regional Architect's Office, Department of Public Works, Vancouver.
H. A. ROSS, Mortgage Department, Manufacturers' Life Insurance Co., Vancouver.
A. W. SLIPPER, Assistant Director, Design and Planning Department of Physical Plant, University of British Columbia, Vancouver.
C. A. TIERS, Assistant Professor, School of Architecture, University of British Columbia, Vancouver.
M. S. THOMPSON, Chief Estimator, Dominion Construction Co. Ltd. Vancouver.
V. THORSON, Structural Engineer, West Vancouver.

COMPUTER PROGRAMMING AND SYSTEMS ADVISORY COMMITTEE

Chairman:

J. A. SPEIGHT, Computech Consulting Corp. Ltd., Vancouver.

Ex Officio:

E. W. H. BROWN, Director, Business Management Division, British Columbia Institute of Technology, Burnaby.
D. BRECKNER, Department Head, Computer Programming and Systems Technology, British Columbia Institute of Technology, Burnaby.
G. W. KRUCIK, Director of Data Processing, British Columbia Institute of Technology, Burnaby.

Members:

J. BAIRD, Director of Data Processing and Research, Office of the Prime Minister, Parliament Buildings, Victoria.
E. S. GARNER, Manager, Data Processing, British Columbia Hydro and Power Authority, Vancouver.
DR. J. M. KENNEDY, Director of Computing Centre, University of British Columbia, Vancouver.
L. WAYNE LEROUX (Alumni Rep.), Manager, Data Centre, International Business Machines, Vancouver.
D. MURRAY, Director of Data Processing, British Columbia Telephone Company, Vancouver.
J. R. P. POWELL, Manager, Data Processing, MacMillan Bloedel Limited, Vancouver.
R. W. RUHWALD, Vice-President, Data Processing Management Association, Vancouver.
R. L. STEVENSON, Manager, Data Center, Crown Zellerbach Canada Limited, Vancouver.

FINANCIAL MANAGEMENT ADVISORY COMMITTEE

Chairman:

L. N. DYER, Secretary-Treasurer, The Canadian Fishing Company Limited, Vancouver.

Ex Officio:

E. W. H. BROWN, Director, Business Management Division, British Columbia Institute of Technology, Burnaby.

P. J. WOOLLEY, Department Head, Financial Management Technology, British Columbia Institute of Technology, Burnaby.

Members:

E. L. AFFLECK, Director of Education, Institute of Chartered Accountants of British Columbia, Vancouver.
W. C. EILERS, Vice-President, Pemberton Securities Limited, Vancouver.
J. B. FERGUSON, Vice-President, Gulf of Georgia Towing Co. Ltd., Vancouver.
W. M. GOODLET, Assistant Credit Manager, Home Oil Distributors Ltd., Vancouver.
T. C. HUMPHREYS, Vice-President and Treasurer, Standard Oil Company of B.C. Limited, Vancouver.
L. G. JUNOD, Co-ordinator, Institute of Canadian Bankers.
W. C. MCCALPIN, President, McCalpin, Leche & Company Limited, Vancouver.
K. A. SIMPSON, Chairman of Education Committee, Society of Industrial Accountants of British Columbia, Vancouver.
H. K. NAYLOR, Assistant General Manager, Western Division, Canada Permanent Trust Company, Vancouver.
R. G. SPELLISCY, Vice-President and Controller, Canada Safeway Limited, Vancouver.
L. R. SPRINGALL, DIPL.T. (Alumni Rep.), Accountant, E.D.P. Industries Limited, Vancouver.
D. G. USHER, Partner, Thorne, Gunn, Helliwell & Christenson, Vancouver.
K. F. WEAVER, Certified General Accountants' Association of British Columbia, Vancouver.
E. M. WOLFE, M.L.A., President, Wolfe Chevrolet-Oldsmobile Ltd., Vancouver.

MARKETING MANAGEMENT

MARKETING MANAGEMENT ADVISORY COMMITTEE

Chairman:

R. T. STEWART, Vice-President, Marketing, Scott Paper Limited, Vancouver.

Ex Officio:

E. W. H. BROWN, Director, Business Management Division, British Columbia Institute of Technology, Burnaby.
G. H. ABBOTT, Department Head, Marketing Management Technology, British Columbia Institute of Technology, Burnaby.

Members:

A. M. BELL, Bell Advertising Ltd., Vancouver.
P. H. E. BJARNESON, President, Cunningham Drug Stores Ltd., Vancouver.
D. G. BUCKLEY, General Manager, Western Region, Hudson's Bay Company, Vancouver.
J. L. DAMPIER, Vice-President and General Manager, Nabob Foods, Burnaby.
MISS K. DURNIN (Alumni Rep.), Divisional Manager, Ladies Sportswear, Simpsons-Sears B.C. Ltd., Nanaimo.
T. R. FARRELL, Executive Vice-President, Woodward Stores Ltd., Vancouver.

J. L. GOURLAY, Assistant General Manager, Buckerfield's Ltd., Vancouver.
D. HUDSON, General Manager, Eatons Company Limited, Vancouver.
J. VAN DE KAMER, Vice-President, McKim/Benton and Bowles Ltd., Vancouver, and representing The American Marketing Association (British Columbia Chapter).
J. MACD. LECKY, Chairman, Vancouver Town Planning Commission.
R. H. MCLEAN, Manager, Advertising and Sales Promotion, Home Oil Distributors Ltd., Vancouver, and representing The Sales and Marketing Executives of Vancouver.
JOHN NAIRN, Manager, Market Research and Statistics, British Columbia Hydro and Power Authority, Vancouver.
S. M. OBERG, D.B.A., Associate Professor, Faculty of Commerce and Business Administration, University of British Columbia, Vancouver.
BRUCE C. WARD, General Manager, British Columbia Retail Stores, Simpson-Sears, Limited, Burnaby.
W. C. WRIGHT, President and General Manager, Gault Brothers Ltd., Vancouver.

TRAFFIC AND TRANSPORTATION OPTION ADVISORY COMMITTEE

Chairman:

G. F. NELSON, Manager, Physical Distribution, MacMillan Bloedel Ltd., Vancouver.

Ex Officio:

E. W. H. BROWN, Director, Business Management Division, British Columbia Institute of Technology, Burnaby.
G. H. ABBOTT, Department Head, Marketing Management Technology, British Columbia Institute of Technology, Burnaby.
E. M. IANNACONE, Senior Instructor, Traffic and Transportation Option, British Columbia Institute of Technology, Burnaby.

Members:

S. J. BOGGIS, Traffic Manager, Woodward Stores Ltd., Vancouver.
C. M. DEFIEUX, Marine Editor, Vancouver Sun.
W. M. HARRISON, Assistant to Vice-President, C.P. Rail, Vancouver.
W. E. MCKINNEY, General Sales Manager, Johnston Terminals Ltd., Vancouver.
A. C. NICHOLLS, Secretary, Automotive Transport Association of British Columbia, Burnaby.
B. L. OMALLEY, Traffic Manager, Leith and Dyke Ltd., Vancouver.
DR. H. L. PURDY, Lecturer, University of British Columbia, Vancouver.
A. D. RUSSELL, Cargo Service Manager, Air Canada, Vancouver.
CAPT. N. P. SMITH, Manager, Canadian Blue Star Line (1940) Ltd., Vancouver.

TECHNICAL MANAGEMENT ADVISORY COMMITTEE

Chairman:

W. M. YOUNG, President, Finning Tractor & Equipment Co. Ltd., Vancouver.

Ex Officio:

E. W. H. BROWN, Director, Business Management Division, British Columbia Institute of Technology, Burnaby.

C. N. MACKEOWN, Department Head, Technical Management Technology, British Columbia Institute of Technology, Burnaby.

Members:

S. F. CROCKER, President, B.C. Equipment Co. Ltd., Vancouver.
G. R. DAWSON, President, Dawson Construction Ltd. and Dawson & Hall Ltd., Vancouver.
A. M. EYRE, President, Dueck on Broadway Limited, Vancouver.
B. G. GINTER, President, Tartan Brewing Ltd., Prince George.
R. JENS (Alumni Rep.), Finning Tractor & Equipment Co. Ltd., Vancouver.
L. KELLOGG, Vice-President, Stevenson & Kellogg Co., Vancouver.
D. A. KING, Industrial Engineer, British Columbia Research Council, Vancouver.
E. H. MCCAFFERY, Secretary-Manager, British Columbia Branch, Canadian Plumbing and Mechanical Contractors' Association, Vancouver.
J. MILLER, Vice-President and General Manager, Fleck Bros. Ltd., Vancouver.
J. PATTERSON, Vice-President, Peter Kiewit & Sons of Canada Ltd., Vancouver.
A. S. RENDELL, President, Rendell Tractor & Equipment Co. Ltd., Vancouver.
D. SMITH, Head, Division of Technical Services, British Columbia Research Council, Vancouver.
E. D. SUTCLIFFE, General Manager, British Columbia Operations, Dominion Construction Co. Ltd., Vancouver.
F. TEMPLETON, President, Wing Machinery Ltd., Vancouver.

CHEMICAL AND METALLURGICAL ADVISORY COMMITTEE

Chairman:

DR. B. H. LEVELTON, President, B. H. Levelton & Associates Ltd., Vancouver.

Ex Officio:

D. K. BANNERMAN, Director, Engineering Division, British Columbia Institute of Technology, Burnaby.
R. C. MASON, Head, Chemical and Metallurgical Technology, British Columbia Institute of Technology, Burnaby.

Members:

W. M. ARMSTRONG, Assistant to the President, University of British Columbia, Vancouver.
R. D. BATEMAN, Crime Laboratory, Royal Canadian Mounted Police, Vancouver.
DR. B. A. DUNNELL, Professor, Department of Chemistry, University of British Columbia, Vancouver.
DR. J. A. H. LUND, Professor, Department of Metallurgy, University of British Columbia, Vancouver.
P. M. MUSSALLEM, Regional Sales Manager, Imperial Oil Ltd., Vancouver.
L. H. SCHNURSTEIN, Vice-President, Manufacturing, Hooker Chemicals Ltd., North Vancouver.
DR. R. STEWART, Professor, Department of Chemistry, University of British Columbia, Vancouver.

DR. C. C. WALDON, Head, Biology Division, British Columbia Research Council, Vancouver.

R. B. (RICHARD) BUCHANON, Resident Engineer, T. W. Beak Consultants Ltd., Vancouver.

CIVIL AND STRUCTURAL ADVISORY COMMITTEE

Chairman:

H. L. SMITH, Consulting Engineer, H. Leslie Smith Ltd., Vancouver.

Ex Officio:

D. K. BANNERMAN, Director, Engineering Division, British Columbia Institute of Technology, Burnaby.

G. Q. LAKE, Head, Civil and Structural Technology, British Columbia Institute of Technology, Burnaby.

Members:

R. M. MARTIN, City Engineer, City of Vancouver, Vancouver.

J. H. MCNAUGHTON, Chief Engineer, Dominion Bridge Co. Ltd., Vancouver.

H. F. WOOSTER, Director, Swan Wooster Engineering Co. Ltd., Vancouver.

ELECTRICAL AND ELECTRONICS ADVISORY COMMITTEE

Chairman:

L. R. KERSEY, Associate Professor, Department of Electrical Engineering, University of British Columbia, Vancouver.

Ex Officio:

D. K. BANNERMAN, Director, Engineering Division, British Columbia Institute of Technology, Burnaby.

R. E. RIDSDALE, Head, Electrical and Electronics Technology, British Columbia Institute of Technology, Burnaby.

E. W. SCRATCHLEY, Chief Instructor, Electrical and Electronics Technology, British Columbia Institute of Technology, Burnaby.

S. D. HUGHES, Chief Instructor, Electrical and Electronics Technology, British Columbia Institute of Technology, Burnaby.

E. E. MCCONECHY, Chief Instructor, Electrical and Electronics Technology, British Columbia Institute of Technology, Burnaby.

Members:

M. G. BRADWELL, Head, Sub Transmission and Distribution System Planning Branch, British Columbia Hydro and Power Authority, Vancouver.

D. S. CARSTAIRS, General Exchange Equipment Engineer, British Columbia Telephone Company, Vancouver.

S. W. DAVIS, President, Broadcast Technical Services Ltd., Vancouver.

G. G. ENGLISH, President, Westronic Engineering Sales Ltd., Vancouver, and Chairman of the Vancouver Section, I.E.E.E.

H. A. HOYLES, Managing Director, Hoyles-Niblock International Ltd., Vancouver.

V. T. LIPP (*Alumni Rep.*), Technician, British Columbia Telephone Company, Vancouver.

A. H. ROME, President, Universal Dynamics Ltd., Vancouver.

A. J. SPILSBURY, President, Spilsbury & Tindall Co. Ltd., Vancouver.
F. R. STEWART, Data Processing Manager, International Business Machines Ltd., Vancouver.
W. H. THOMPSON, Sales Manager, L. A. Varah Limited, Vancouver.
D. J. TURLAND, Manager, Utility Sales, Canadian General Electric Co. Ltd., Vancouver.
B. R. TUPPER, Consultant, Telecommunications, Vancouver.
E. N. WALTON, Chief Engineer, MacMillan Bloedel Limited, Vancouver.
R. L. WEEKS, Engineering Branch Manager, Lenkurt Electric Co. Ltd., Burnaby.
Current President, B.C.I.T. Electrical and Electronics Technology (student).

FOOD PROCESSING ADVISORY COMMITTEE

Chairman:

E. L. DEVLIN, Regional Director, Department of National Health and Welfare, Food and Drug Directorate, Vancouver.

Ex Officio:

D. K. BANNERMAN, Director, Engineering Division, British Columbia Institute of Technology, Burnaby.
R. B. HYDE, Head, Biological Sciences Technology, British Columbia Institute of Technology, Burnaby.

Members:

M. H. CONRAD, Regional Grocery Manager, Standard Brands Limited, Richmond.
E. L. DEVLIN, Regional Director, Department of National Health and Welfare, Food and Drug Directorate, Vancouver.
D. H. KITSON, General Production Manager, Royal City Foods Ltd., New Westminster.
DR. J. F. RICHARDS, Associate Professor, Department of Food Science, University of British Columbia, Vancouver.
DR. C. C. STRACHAN, Director, Research Station, Canada Department of Agriculture, Summerland.

FOOD PRODUCTION AND HORTICULTURE ADVISORY COMMITTEE

Chairman:

DR. J. A. FREEMAN, Research Scientist, Research Station, Canada Department of Agriculture, Agassiz.

Ex Officio:

D. K. BANNERMAN, Director, Engineering Division, British Columbia Institute of Technology, Burnaby.
R. B. HYDE, Head, Biological Sciences Technology, British Columbia Institute of Technology, Burnaby.

Members:

R. S. BERRY, Sales Manager, Surrey Cooperative Association, Surrey.
W. A. CALDER, Vice-President and Director of Marketing, British American Chemical Co. Ltd., Vancouver.

I. C. CARNE, Horticulturist, British Columbia Department of Agriculture, Abbotsford.

DR. J. W. NEILL, Associate Professor of Horticulture, Division of Plant Science, University of British Columbia, Vancouver.

M. POWER, Superintendent, Holland Landscapers Limited, Vancouver.

O. SCHULTZ, Plant Manager, York Farms, Division of Canada Packers Ltd., Sardis.

FOREST PRODUCTS ADVISORY COMMITTEE

Chairman:

DR. R. F. PATTERSON, General Manager, Pulp Production, Canadian Forest Products Ltd., Vancouver.

Ex Officio:

D. K. BANNERMAN, Director, Engineering Division, British Columbia Institute of Technology, Burnaby.

V. HEATH, Head, Forest Resource Technology, British Columbia Institute of Technology, Burnaby.

G. R. HARRIS, Chief Instructor, Forest Resource Technology, British Columbia Institute of Technology, Burnaby.

Members:

D. H. BAKER, Vice-President, Pulp and Paper, British Columbia Forest Products Ltd., Vancouver.

J. E. BARRETT, Manager, Systems Engineering Department, Technical Division, Pulp and Paper Group, MacMillan Bloedel Ltd., New Westminster.

W. G. BEALE, Manager, Planning and Engineering Department, Tahsis Co. Ltd., Vancouver.

DR. E. S. BECKER, Manager, Technical Development, Columbia Cellulose Co. Ltd., Vancouver.

D. CATFORD, Resident Manager, Gold River Pulp Mill Division, Tahsis Co. Ltd., Gold River.

DR. R. S. EVANS, Manager, Cellulose Research Department, Columbia Cellulose Co. Ltd., New Westminster.

B. I. HOWE, Assistant Manager, Powell River Division, MacMillan Bloedel Ltd., Powell River.

J. S. MACEY, Control Superintendent, Canadian Forest Products, Howe Sound Pulp Division, Port Mellon.

J. W. RAVEN, Manager, Quality Control, Council of the Forest Industries of British Columbia, Vancouver.

O. ROTH, Director of Industrial and Personnel Relations, Crown Zellerbach Canada Ltd., Vancouver.

E. C. SHERMAN, Mill Manager, Canadian Forest Products, Howe Sound Pulp Division, Port Mellon.

J. H. SHUMKA, Project Engineer, Central Engineering, MacMillan Bloedel Ltd., Vancouver.

F. A. TAYELOR, Manager, Technical Services, Council of the Forest Industries of British Columbia, Vancouver.

G. H. TAYLOR, Personnel Development Administrator, Crown Zellerbach Canada Ltd., Vancouver.

D. B. TURNER, Manager, Panel Board Production (B.C.), MacMillan Bloedel Ltd., Vancouver.

E. N. WALTON, Chief Engineer, MacMillan Bloedel Ltd., Vancouver.

DR. R. W. WELLWOOD, Professor, Faculty of Forestry, University of British Columbia, Vancouver.

R. J. WHITTLE, Director of Administration, British Columbia Forest Products Ltd., Vancouver.

FORESTRY ADVISORY COMMITTEE

Chairman:

C. B. DUNHAM, Consulting Forester, West Vancouver.

Ex Officio:

D. K. BANNERMAN, Director, Engineering Division, British Columbia Institute of Technology, Burnaby.

V. HEATH, Head, Forest Resource Technology, British Columbia Institute of Technology, Burnaby.

G. R. HARRIS, Chief Instructor, Forest Resource Technology, British Columbia Institute of Technology, Burnaby.

D. C. HOLMES, Chief Instructor, Forest Resource Technology, British Columbia Institute of Technology, Burnaby.

Members:

R. AHRENS, Provincial Parks Director, Department of Recreation and Conservation, Victoria.

W. G. BURCH, Chief Forester, British Columbia Forest Products Ltd., Vancouver.

H. R. CHISHOLM, Assistant Vice-President and General Manager, Logging Group, MacMillan Bloedel Ltd., Vancouver.

G. F. COUSINEAU (Alumni Rep.), Association of Forest Technologists, Nanaimo.

L. A. DEGRACE, President, Industrial Forestry Services, Prince George.

R. R. DOUGLAS, Vice-President, Forest Operations, Rayonier Canada (B.C.) Ltd., Vancouver.

J. DRENKA, President, The Truck Loggers' Association, Vancouver.

DR. R. E. FOSTER, Director, Forest Products Laboratory, Department of Fisheries and Forestry, Vancouver.

M. W. GORMELY, President, Gormely Forestry Service Ltd., Vancouver.

DR. J. HATTER, Director, British Columbia Fish and Wildlife Branch, Department of Recreation and Conservation, Victoria.

W. HOURSTON, Regional Director of Fisheries, Department of Fisheries and Forestry, Vancouver.

I. C. MACQUEEN, President, Forestal Forestry and Engineering Ltd., Vancouver.

W. P. T. MCGHEE, Manager, Timber Department, Interior Operations, S. M. Simpson Ltd., Kelowna.

N. A. MCRAE, Assistant Chief Forester, i/c services, British Columbia Forest Service, Victoria.

DR. A. MOSS, Consulting Forester, Kelowna.

DR. D. D. MUNRO, Faculty of Forestry, University of British Columbia, Vancouver.

H. PAISH, Howard Paish and Associates, Resource Management Consultants, Vancouver.

CO-ORDINATING COMMITTEE ON HEALTH TECHNOLOGY

Chairman:

S. T. RICHARDS, Director, Health Technology Division, British Columbia Institute of Technology, Burnaby.

Members:

DR. G. R. F. ELLIOT, Assistant Deputy Minister of Health, Bureau of Special Health Services, Vancouver.

R. S. CAREY, Chairman of the Technological Planning Committee, British Columbia Institute of Technology, Burnaby.

G. W. GRIERSON, Director of Education and Consultation Services, British Columbia Hospitals' Association, Vancouver.

J. W. MAINGUY, Director of Hospital Consultation, Development and Research, Hospital Insurance Service, Victoria.

DR. H. STANSFIELD, Vancouver.

J. S. WHITE, Director of Technical and Vocational Training, Department of Education, Victoria.

DR. D. H. WILLIAMS, Associate Dean, Office of the Dean, Faculty of Medicine, University of British Columbia, Vancouver.

BIOMEDICAL ELECTRONICS ADVISORY COMMITTEE

Chairman:

DR. H. V. RICE, Director, Developmental and Technical Services Department, St. Paul's Hospital, Vancouver.

Ex Officio:

S. T. RICHARDS, Director, Health Technology Division, British Columbia Institute of Technology, Burnaby.

F. P. BAUCK, Senior Instructor, Department of Environmental and Health Engineering Services, British Columbia Institute of Technology, Burnaby.

A. RIDGWAY, Head, Department of Environmental and Health Engineering Services, British Columbia Institute of Technology, Burnaby.

Members:

DR. S. M. DRANCE, Associate Professor, Ophthalmology Research Unit, Vancouver General Hospital, Vancouver.

DR. J. MACDONALD, Associate Professor, Department of Electrical Engineering, Faculty of Applied Sciences, University of British Columbia, Vancouver.

R. E. RIDSDALE, Head, Electrical and Electronics Technology, British Columbia Institute of Technology, Burnaby.

ELECTRONEUROPHYSIOLOGY ADVISORY COMMITTEE

Ex Officio:

S. T. RICHARDS, Director, Health Technology Division, British Columbia Institute of Technology, Burnaby.

F. P. BAUCK, Senior Instructor, Department of Environmental and Health Engineering Services, British Columbia Institute of Technology, Burnaby.

A. RIDGWAY, Head, Department of Environmental and Health Engineering Services, British Columbia Institute of Technology, Burnaby.

Members:

DR. N. L. AUCKLAND, Clinical Encephalographer, Fairmont Encephalography Laboratory, Vancouver.

R. FERGUSON, Chief Technician, Electroencephalography Department, Vancouver General Hospital, Vancouver.

DR. M. D. LOW, Director, Electroencephalography Department, Vancouver General Hospital, Vancouver.

W. A. J. MCGOVERN, Chief Technician, Electroencephalography Department, Royal Jubilee Hospital, Victoria.

MISS B. ROBB, E.E.G. Technician, Royal Columbian Hospital, New Westminster.

MRS. W. WALDMAN, Technician in Charge, E.E.G.-E.C.G. Cardiopulmonary Laboratory, St. Paul's Hospital, Vancouver.

HEALTH DATA ADVISORY COMMITTEE

Ex Officio:

S. T. RICHARDS, Director, Health Technology Division, British Columbia Institute of Technology, Burnaby.

A. RIDGWAY, Head, Department of Environmental and Health Engineering Services, British Columbia Institute of Technology, Burnaby.

Members:

SISTER J. BROPHY, Medical Record Librarian, Peace Arch District Hospital, White Rock.

J. W. SHORT, Assistant Administrator, Children's Hospital, Vancouver.

MRS. M. TAGGART, Chief Medical Record Librarian, Health Sciences Centre Hospital, University of British Columbia, Vancouver.

MRS. J. TAYLOR, Chief Medical Record Librarian, Vancouver General Hospital, Vancouver.

MRS. D. J. WINKELAAR, Chief Medical Record Librarian, St. Mary's Hospital, New Westminster.

MEDICAL LABORATORY ADVISORY COMMITTEE

Chairman:

DR. R. W. SPITZER, Biochemist, Department of Pathology, Royal Columbian Hospital, New Westminster.

Ex Officio:

S. T. RICHARDS, Director, Health Technology Division, British Columbia Institute of Technology, Burnaby.

MRS. M. J. BLAIR, Head, Department of Medical Laboratory Services, British Columbia Institute of Technology, Burnaby.

MRS. G. M. CAMDEN, Chief Instructor, Department of Medical Laboratory Services, British Columbia Institute of Technology, Burnaby.

Members:

DR. G. H. ANDERSON, Associate Director, Department of Pathology, Royal Jubilee Hospital, Victoria.

DR. E. J. BOWMER, Director, Division of Laboratories, Health Branch, Department of Health Services and Hospital Insurance, Vancouver.

C. F. A. CULLING, Instructor, Department of Pathology, Faculty of Medicine, University of British Columbia, Vancouver.

Miss M. Erskine, Technical Supervisor, Clinical Laboratory Services, Department of Health Services and Hospital Insurance, Vancouver.
Dr. G. R. Gray, Associate Hæmatologist, Department of Pathology, Vancouver General Hospital, Vancouver.
Dr. G. M. Martin, Chief, Clinical Pathology Service, Royal Inland Hospital, Kamloops.
Dr. E. W. Shepherd, Pathologist, Royal Inland Hospital, Kamloops.

MEDICAL RADIOGRAPHY ADVISORY COMMITTEE

Chairman:

Dr. A. Sherkat, Department of Radiology, St. Paul's Hospital, Vancouver.

Ex Officio:

S. T. Richards, Director, Health Technology Division, British Columbia Institute of Technology, Burnaby.
W. E. Noel, Head, Department of Radiological Technical Services, British Columbia Institute of Technology, Burnaby.
Miss P. M. Rogers, Chief Instructor, Department of Radiological Technical Services, British Columbia Institute of Technology, Burnaby.

Members:

Dr. R. W. Boyd, Director, Department of Radiology, Vancouver General Hospital, Vancouver.
Dr. H. Brooke, Director, Department of Radiology, Burnaby General Hospital, Burnaby.
A. Cliffe, Senior X-ray Technician, Kelowna General Hospital, Kelowna.
Dr. H. M. Edmison, Director, Department of Radiology, Royal Jubilee Hospital, Victoria.
B. Gagnon, Chief Technician, Department of Radiology, St. Paul's Hospital, Vancouver.
Miss B. Hofner, Supervising Technician, Department of Radiology, St. Joseph's Hospital, Victoria.
J. Logan, Chief Technician, Department of Radiology, Lions Gate Hospital, North Vancouver.
Dr. J. McPhee, Director, Department of Radiology, Royal Columbian Hospital, New Westminster.
Dr. C. B. Moss, Director, Department of Radiology, Kelowna General Hospital, Kelowna.
H. Oancia, Chief Technician, Department of Radiology, Royal Columbian Hospital, New Westminster.
Dr. A. Paramonoff, Director, Department of Radiology, Lions Gate Hospital, North Vancouver.
Dr. R. G. Pitman, Director, Department of Radiology, St. Paul's Hospital, Vancouver.
J. Ross, Chief Technician, Department of Radiology, Royal Jubilee Hospital, Victoria.
G. Smith, Chief Technician, Department of Radiology, Burnaby General Hospital, Burnaby.
S. M. Smith, Technical Adviser, Radiology, Department of Health Services and Hospital Insurance, Vancouver.
Dr. F. G. Stuart, Director, Department of Radiology, St. Joseph's Hospital, Victoria.
E. Wylie, Chief Technician, Department of Radiology, Vancouver General Hospital, Vancouver.

NUCLEAR MEDICINE TECHNOLOGY ADVISORY COMMITTEE

Chairman:

DR. R. T. MORRISON, Chief of Division of Nuclear Medicine, Department of Radiology, Vancouver General Hospital, Vancouver.

Ex Officio:

S. T. RICHARDS, Director, Health Technology Division, British Columbia Institute of Technology, Burnaby.

MISS B. CLARK, Senior Instructor, Department of Radiological Technical Services, British Columbia Institute of Technology, Burnaby.

W. E. NOEL, Head, Department of Radiological Technical Services, British Columbia Institute of Technology, Burnaby.

Members:

MISS B. L. ARCHIBALD, Radiation Chemist, Department of Nuclear Medicine, Vancouver General Hospital, Vancouver.

DR. J. A. BIRKBECK, Assistant Professor, Department of Pædiatrics, Faculty of Medicine, University of British Columbia, Vancouver.

DR. E. F. CHRISTOPHERSON, Director, Metropolitan Bio-Medical Laboratory Ltd., Vancouver.

DR. T. W. DAVIS, Director, Department of Nuclear Medicine, St. Paul's Hospital, Vancouver.

DR. S. FISHMAN, Director of Chemistry and Isotope Laboratories, Department of Pathology, Shaughnessy Hospital, Vancouver.

DR. P. F. SOLVONUK, Biochemist, Department of Clinical Chemistry, Vancouver General Hospital, Vancouver.

DR. A. E. W. TRITES, Chief of Service, Department of Pathology, Shaughnessy Hospital, Vancouver.

NURSING ADVISORY COMMITTEE

Chairman:

DR. RAE CHITTICK, Vancouver.

Ex Officio:

S. T. RICHARDS, Director, Health Technology Division, British Columbia Institute of Technology, Burnaby.

MRS. B. B. KOZIER, Head, Department of Patient Care Services, British Columbia Institute of Technology, Burnaby.

MISS M. RENWICK, Chief Instructor, Department of Patient Care Services, British Columbia Institute of Technology, Burnaby.

Members:

MISS F. A. KENNEDY, Director of Education Services, Registered Nurses' Association of British Columbia, Vancouver.

MISS M. M. LONERGAN, Nursing Consultant, Mental Health Services Branch, Department of Health Services and Hospital Insurance, Vancouver.

MISS E. K. MCCANN, Acting Director, School of Nursing, University of British Columbia, Vancouver.

MISS E. E. NORDLUND, Consultant, British Columbia Hospital Insurance Service, Victoria.

MRS. W. REID, Director of Nursing, Burnaby General Hospital, Burnaby.

DR. H. STANSFIELD, British Columbia Medical Association, Vancouver.

MRS. N. STEVENS, Registered Nurses' Association of British Columbia, Director of Nursing, Royal Columbian Hospital, New Westminster.

MISS F. TROUT, Assistant Administrator, Lions Gate Hospital, North Vancouver.

PUBLIC HEALTH AND POLLUTION CONTROL ADVISORY COMMITTEE

Chairman:

DR. C. J. G. MACKENZIE, Assistant Professor, Department of Preventive Medicine, Faculty of Medicine, University of British Columbia, Vancouver.

Ex Officio:

S. T. RICHARDS, Director, Health Technology Division, British Columbia Institute of Technology, Burnaby.

L. E. PENNER, Chief Instructor, Department of Environmental and Health Engineering Services, British Columbia Institute of Technology, Burnaby.

A. RIDGWAY, Head, Department of Environmental and Health Engineering Services, British Columbia Institute of Technology, Burnaby.

Members:

W. BAILEY, Director, Division of Public Health Engineering, Health Branch, Victoria.

E. T. BRADLEY, Public Health Inspector, Burnaby Health Department, Burnaby.

A. C. DOBSON, Chief Health Inspector, North Shore Health Unit, North Vancouver.

DR. G. A. MOTT, Deputy Medical Health Officer, City of Vancouver Health Department, Vancouver.

R. G. SCOTT, Consultant in Public Health Inspection, Health Branch, Parliament Buildings, Victoria.

C. R. STONEHOUSE, Chief Public Health Inspector, Health Branch, Victoria.

J. A. STRINGER, Sanitation Control Officer, City of Vancouver Health Department, Vancouver.

RESPIRATORY TECHNOLOGY ADVISORY COMMITTEE

Ex Officio:

S. T. RICHARDS, Director, Health Technology Division, British Columbia Institute of Technology, Burnaby.

A. RIDGWAY, Head, Department of Environmental and Health Engineering Services, British Columbia Institute of Technology, Burnaby.

Members:

DR. M. BERRY, Department of Anæsthesia, St. Paul's Hospital, Vancouver.

DR. W. ST. J. BUCKLER, Director, Department of Physical Medicine, Vancouver General Hospital, Vancouver.

T. FISHWICK, Chief Technician, Inhalation Therapy Department, Vancouver General Hospital, Vancouver.

DR. H. B. GRAVES, Director, Department of Anæsthesiology, Vancouver General Hospital, Vancouver.

DR. S. GRZYBOWSKI, Associate Professor, Department of Medicine, University of British Columbia, Vancouver.

J. ROBERTS, Director of Administrative and Personnel Services, Vancouver General Hospital, Vancouver.
DR. W. A. YOUNG, Director, Pulmonary Function Laboratory, St. Paul's Hospital, Vancouver.

HOTEL, MOTEL, AND FOOD SERVICE MANAGEMENT ADVISORY COMMITTEE

Chairman:

L. FINAMORE, General Manager, Empress Hotel, Victoria.

Ex Officio:

E. W. H. BROWN, Director, Business Management Division, British Columbia Institute of Technology, Burnaby.
M. M. COLTMAN, Department Head, Hotel, Motel, and Food Service Management Technology, British Columbia Institute of Technology, Burnaby.
J. G. LINDENLAUB, Chief Instructor, Hotel, Motel, and Food Service Management Technology, British Columbia Institute of Technology, Burnaby.

Members:

M. AMMANN, Queen Elizabeth Theatre Restaurant, Vancouver.
D. BELLAMY, Managing Director, Canadian Restaurant Association, British Columbia Division, Vancouver.
V. T. BURT, General Manager, Vancouver Hotel, Vancouver.
MRS. J. DANN, Executive Secretary, British Columbia Motels, Resorts & Trailer Courts Association, Vancouver.
J. T. GRIERSON, Manager, The University Club of Vancouver, Vancouver.
C. PETER HUDSON, General Manager, Bayshore Inn, Vancouver.
H. L. LITTLE, Western Region Manager, Restaurant Division, Cara Operations Ltd., Richmond.
L. W. MANUEL, Managing Director, British Columbia Hotels' Association, Vancouver.
D. M. RICHARDS (Alumni Rep.), Convention Manager, University of British Columbia.
E. SCHMUTZ, Co-ordinator, Accommodation and Food Services, British Columbia Government, Burnaby.

INSTRUMENTATION AND SYSTEMS ADVISORY COMMITTEE

Chairman:

C. R. ROSS, Manager, Instrumentation Department, H. A. Simons (Intl.) Ltd.

Ex Officio:

D. K. BANNERMAN, Director, Engineering Division, British Columbia Institute of Technology, Burnaby.
J. O. HULBERT, Head, Instrumentation Technology, British Columbia Institute of Technology, Burnaby.

Members:

D. B. ANSELL, Chief Instrument Engineer, Trans Mountain Oil Pipeline Co., Vancouver.
J. U. CALDICOTT, Assistant Engineer (Instrumentation), Central Engineering, MacMillan Bloedel Limited, Vancouver.

J. D. CAMERON, Instrument Maintenance Supervisor, Burrard Thermal Plant, Ioco.
E. R. DALLAS, Sales Manager, Northern Columbia Process Equipment Company, North Vancouver.
J. G. KENYON, British Columbia Past-President, Instrument Society of America.
W. V. NICHOLSON, Chief Instrument Engineer, Cominco Ltd., Trail.
A. C. VAN DER ENDE, British Columbia Institute of Technology graduate, British Columbia Research Council, Vancouver.

LIBRARY ADVISORY COMMITTEE

Chairman:

B. F. STUART-STUBBS, Head Librarian, University of British Columbia, Vancouver.

Ex Officio:

R. HARRIS, Head Librarian, British Columbia Institute of Technology, Burnaby.

Members:

D. BAIRD, Head Librarian, Simon Fraser University, Burnaby.
I. F. BELL, Associate Librarian, University of British Columbia, Vancouver.
MRS. A. BREARLEY, Assistant Professor, School of Librarianship, University of British Columbia, Vancouver.
D. HALLIWELL, Head Librarian, University of Victoria, Victoria.
W. S. LANNING, Associate Professor and Director of Curriculum Laboratory, University of British Columbia, Vancouver.
MISS A. R. LEITH, Head, Science Division, Library, University of British Columbia, Vancouver.
MISS A. TUFTS, Head, Business Division, Vancouver Public Library, Vancouver.

MECHANICAL ADVISORY COMMITTEE

Chairman:

P. N. BLAND, Engineer, H. A. Simons (International) Ltd., Vancouver.

Ex Officio:

D. K. BANNERMAN, Director, Engineering Division, British Columbia Institute of Technology, Burnaby.
E. J. CAIRNS, Head, Mechanical Technology, British Columbia Institute of Technology, Burnaby.

Members:

R. D. BREWER, President, Brewer's Machine Shop Ltd., North Surrey.
DR. J. P. DUNCAN, Head, Department of Mechanical Engineering, University of British Columbia, Vancouver.
D. F. GUNNING, Superintendent, Rolling Mill Division, Western Canada Steel Ltd., Vancouver.
F. R. KILLAM, President, I.C.L. Engineering Ltd., Vancouver.
W. E. MILLS, Senior Mechanical Engineer, Department of Public Works, Victoria.
W. F. PAGE, Machine Shop Foreman, Burrard Drydock Co. Ltd., North Vancouver.

N. PURSELL, Senior Engineer, International Power & Engineering Consultants Ltd., Vancouver.
E. S. RHODES, Project Manager, H. A. Simons (International) Ltd., Vancouver.
W. O. RICHMOND, Professor, Department of Mechanical Engineering, University of British Columbia, Vancouver.
L. F. WRIGHT, Vice-President, Wright Engineers Ltd., Vancouver.

MINING TECHNOLOGY ADVISORY COMMITTEE

Chairman:

L. G. R. CROUCH, Professor of Mining Engineering, Department of Mining and Metallurgy, University of British Columbia, Vancouver.

Ex Officio:

D. K. BANNERMAN, Director, Engineering Division, British Columbia Institute of Technology, Burnaby.
A. H. MANIFOLD, Acting Department Head, Mining Technology, British Columbia Institute of Technology, Burnaby.

Members:

W. S. ADAMS, Executive Assistant, Curriculum, Vancouver School Board, Adult Education Department, Vancouver.
DR. J. A. GOWER, Associate Professor, Department of Geology, University of British Columbia, Vancouver.
J. D. LITTLE, Vice-President, Operations, Placer Development Ltd., Vancouver.
J. W. PECK, Chief Inspector of Mines, British Columbia Government, Victoria.
E. C. ROPER, Consultant, Vancouver.

NATURAL GAS AND PETROLEUM ADVISORY COMMITTEE

Chairman:

A. G. KANEEN, Chief Inspector, Department of Public Works, Gas Inspection Branch, Vancouver.

Ex Officio:

D. K. BANNERMAN, Director, Engineering Division, British Columbia Institute of Technology, Burnaby.
I. M. ANDERSON, Acting Department Head, Natural Gas and Petroleum Technology, British Columbia Institute of Technology, Burnaby.

Members:

H. BECKETT, Technical Superintendent, Imperial Oil Enterprises Ltd., Ioco.
W. A. JACKSON, Manager, Western Pacific Products & Crude Oil Pipelines Ltd., Vancouver.
R. KADLEC, Inland Natural Gas Co., Vancouver.
K. KIDD, Gas Division, British Columbia Hydro and Power Authority, Burnaby.
J. D. LINEHAM, Chief of Petroleum and Natural Gas Division, Department of Mines and Mineral Resources, Victoria.
G. B. MCGILLIVRAY, Manager, British Columbia Division, Canadian Petroleum Association, Victoria.
R. D. TOEWS, Westcoast Transmission Co. Ltd., Vancouver.

SURVEYING ADVISORY COMMITTEE

Chairman:

W. N. PAPOVE, Partner, McElhanney Associates, Land Surveyors, Vancouver.

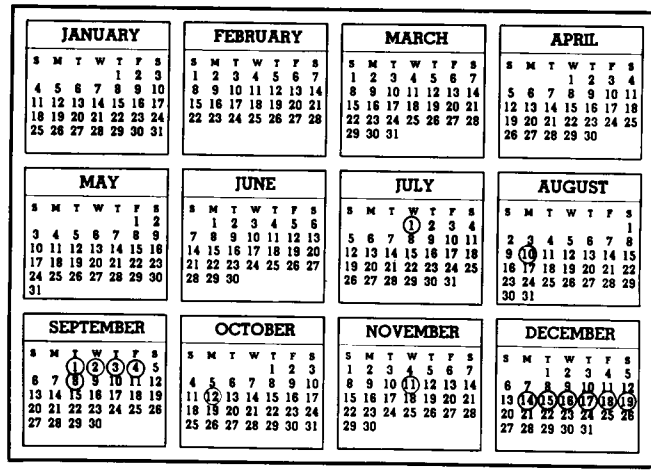
Ex Officio:

D. K. BANNERMAN, Director, Engineering Division, British Columbia Institute of Technology, Burnaby.

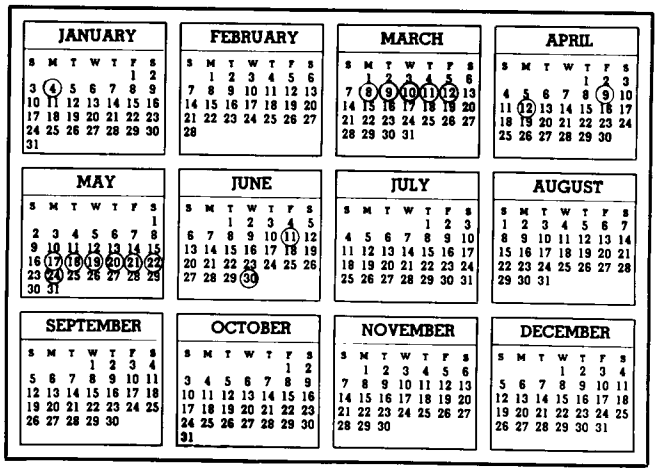
Members:

W. G. BEARMAN, Past President, Canadian Institute of Surveying, Burnaby.
M. BOLTON, Regional Hydrography, Department of Energy, Mines and Resources, Victoria.
R. A. BROCKLEBANK, Partner, McElhaney Surveying & Engineering Ltd., Aerial Surveyors, Surrey.
A. A. W. BURHOE, Assistant City Surveyor, Vancouver.
S. H. DE JONG, Professor, Department of Civil Engineering, University of British Columbia, Vancouver.
R. J. GREGORY, Municipal Surveyor, Surrey.
A. T. HOLMES, Partner, Underhill & Underhill, Surveyors and Civil Engineers, Vancouver.
E. R. MCMINN, Chief, Topographic Division, Department of Lands, Forests, and Water Resources, Victoria.
M. H. MELLE, Supervisor of Surveying, British Columbia Hydro and Power Authority, Vancouver.
W. G. ROBINSON, Partner, Underhill & Underhill, Surveyors and Civil Engineers, Vancouver.
D. J. ROY, Land Surveyor and Civil Engineer, Vancouver.

1970


JANUARY
S M T W T F S
1 2 3
4 5 6 7 8 9 10
11 12 13 14 15 16 17
18 19 20 21 22 23 24
25 26 27 28 29 30 31
FEBRUARY
S M T W T F S
1 2 3 4 5 6 7
8 9 10 11 12 13 14
15 16 17 18 19 20 21
22 23 24 25 26 27 28
MARCH
S M T W T F S
1 2 3 4 5 6 7
8 9 10 11 12 13 14
15 16 17 18 19 20 21
22 23 24 25 26 27 28
29 30 31
APRIL
S M T W T F S
1 2 3 4
5 6 7 8 9 10 11
12 13 14 15 16 17 18
19 20 21 22 23 24 25
26 27 28 29 30
MAY
S M T W T F S
1 2
3 4 5 6 7 8 9
10 11 12 13 14 15 16
17 18 19 20 21 22 23
24 25 26 27 28 29 30
31
JUNE
S M T W T F S
1 2 3 4 5 6
7 8 9 10 11 12 13
14 15 16 17 18 19 20
21 22 23 24 25 26 27
28 29 30
JULY
S M T W T F S
1 2 3 4
5 6 7 8 9 10 11
12 13 14 15 16 17 18
19 20 21 22 23 24 25
26 27 28 29 30 31
AUGUST
S M T W T F S
1
2 3 4 5 6 7 8
9 10 11 12 13 14 15
16 17 18 19 20 21 22
23 24 25 26 27 28 29
30 31
SEPTEMBER
S M T W T F S
1 2 3 4 5
6 7 8 9 10 11 12
13 14 15 16 17 18 19
20 21 22 23 24 25 26
27 28 29 30
OCTOBER
S M T W T F S
1 2 3
4 5 6 7 8 9 10
11 12 13 14 15 16 17
18 19 20 21 22 23 24
25 26 27 28 29 30 31
NOVEMBER
S M T W T F S
1 2 3 4 5 6 7
8 9 10 11 12 13 14
15 16 17 18 19 20 21
22 23 24 25 26 27 28
29 30
DECEMBER
S M T W T F S
1 2 3 4 5
6 7 8 9 10 11 12
13 14 15 16 17 18 19
20 21 22 23 24 25 26
27 28 29 30 31

1971


JANUARY
S M T W T F S
1 2
3 4 5 6 7 8 9
10 11 12 13 14 15 16
17 18 19 20 21 22 23
24 25 26 27 28 29 30
31
FEBRUARY
S M T W T F S
1 2 3 4 5 6
7 8 9 10 11 12 13
14 15 16 17 18 19 20
21 22 23 24 25 26 27
28
MARCH
S M T W T F S
1 2 3 4 5 6
7 8 9 10 11 12 13
14 15 16 17 18 19 20
21 22 23 24 25 26 27
28 29 30 31
APRIL
S M T W T F S
1 2 3
4 5 6 7 8 9 10
11 12 13 14 15 16 17
18 19 20 21 22 23 24
25 26 27 28 29 30
MAY
S M T W T F S
1
2 3 4 5 6 7 8
9 10 11 12 13 14 15
16 17 18 19 20 21 22
23 24 25 26 27 28 29
30 31
JUNE
S M T W T F S
1 2 3 4 5
6 7 8 9 10 11 12
13 14 15 16 17 18 19
20 21 22 23 24 25 26
27 28 29 30
JULY
S M T W T F S
1 2 3
4 5 6 7 8 9 10
11 12 13 14 15 16 17
18 19 20 21 22 23 24
25 26 27 28 29 30 31
AUGUST
S M T W T F S
1 2 3 4 5 6 7
8 9 10 11 12 13 14
15 16 17 18 19 20 21
22 23 24 25 26 27 28
29 30 31
SEPTEMBER
S M T W T F S
1 2 3 4
5 6 7 8 9 10 11
12 13 14 15 16 17 18
19 20 21 22 23 24 25
26 27 28 29 30
OCTOBER
S M T W T F S
1 2
3 4 5 6 7 8 9
10 11 12 13 14 15 16
17 18 19 20 21 22 23
24 25 26 27 28 29 30
31
NOVEMBER
S M T W T F S
1 2 3 4 5 6
7 8 9 10 11 12 13
14 15 16 17 18 19 20
21 22 23 24 25 26 27
28 29 30
DECEMBER
S M T W T F S
1 2 3 4
5 6 7 8 9 10 11
12 13 14 15 16 17 18
19 20 21 22 23 24 25
26 27 28 29 30 31

Calendar of Events, Academic Year 1970–71

1970

July 1 - - - - Commencement of academic year.

August 10 - - - Closing date of applications for admission.

September 1, 2, and 3 - Registration of students.

September 4 - - - Opening Day ceremonies.

September 8 - - - First and third term—classes begin.

October 12 - - - Thanksgiving Day holiday.

November 11 - - Remembrance Day holiday.

December 14 to 18 - First and third term examinations.

December 19 - - Christmas vacation commences.

1971

January 4 - - - Second and fourth term—classes begin.

March 8 to 12 - - Spring break.

April 9 - - - Good Friday holiday.

April 12 - - - Easter Monday holiday.

May 17 to 21 - - Second and fourth term examinations.

May 22 - - - Summer vacation commences.

May 24 - - - Victoria Day holiday.

June 11 - - - Convocation.

June 30 - - - Conclusion of academic year.

General Information

THE INSTITUTE PROGRAMME

The objective of the Institute programme is to provide graduate technologists equipped to meet the needs of industry. Changes in the courses are made only after careful consideration and on the advice of members of the Advisory Committee, employers of graduates, and representatives of various professional organizations.

In the first year there is a common programme of study for most technologies. The subjects have been selected to give students the fundamental principles common to all branches of the technologies.

In both years basic principles and their applications are stressed in the lecture room, and these principles are tested and verified in the laboratories. The laboratory work is organized into groups of experiments. These experiments have been developed to permit students to test ideas formulated in the lecture room, to acquire familiarity with testing and designing techniques, and to develop dexterity in handling experimental equipment. The effectiveness of this approach is reflected in the increased number of students seeking admission to the various programmes and in the demand on the part of industry for services of the graduates of institutes of technology.

I. ENROLMENT

A. Conditions of Admission

1. *General Prerequisites.* — All student applicants must show documentary proof that they have graduated from Grade XII on the Academic and Technical Programme or the equivalent.

Students are referred to each technology for the additional special prerequisites required for enrolment in that technology.

Because the Institute's requirements for admission are new to the British Columbia school system, and because all secondary schools do not offer all the desirable prerequisites, unavoidable deficiencies in draughting, chemistry, physics, or biology will not necessarily preclude admission to an Institute programme.

2. Applicants educated outside of British Columbia should submit their qualifications to the Registrar's Office of the Institute. Foreign language students must give evidence of reasonable competence in both written and spoken English.

3. A person whose education has been interrupted who, though lacking some of the formal admission requirements, can give evidence of probable success in a course may be admitted as a mature student. Such applications are dealt with on an individual basis. Persons interested should inquire at the Registrar's Office.

4. Applicants who have successfully completed a programme of study at another post-secondary institution, or whose qualifica-

tions warrant consideration, may make application to the Board of Admissions for up to one year advanced standing.

5. All prospective students must be at least 16 years of age. However, there is no upper age limit.

6. In any programme the Board of Admissions reserves the right to accept only those applicants who appear to have the capabilities necessary for success in the programme.

B. PROCEDURE FOR ADMISSION

1. Application forms may be obtained from the Registrar's Office.

2. The following documents and material must accompany the application:

(i) An official transcript of all secondary (British Columbia) or high school *and* university marks, showing necessary credits and grades for admittance to programme desired; or

(ii) A statement from the principal of a senior secondary school stating that applicant is expecting to obtain necessary credits and grades for admittance to the programme desired. *This statement must be substantiated by an official transcript when it becomes available.*

(iii) Academic documents will not be returned whether an applicant is accepted or not accepted for enrolment by the Board of Admissions.

(iv) A registration fee of five dollars ($5), payable by certified cheque or money order. Please send this amount only, with this application form. If your application is accepted, this fee is not refundable.

3. A medical questionnaire must be completed, and medical fitness determined prior to final acceptance.

4. All Health Technology students will be required to show evidence of having had a recent chest X-ray and having completed an immunization programme prior to registration. If, due to extenuating circumstances, supporting documentation is not available at the time of registration, students will be required to complete the necessary procedures at the Institute's health service clinic.

5. Registration dates are September 1, 2, and 3, 1970. Students will be notified as to exact time they are required to register. All enrolling students must appear at the Institute or clarify their intentions by letter or wire before noon of the day of registration, otherwise their position may be forfeited.

C. COUNSELLING

There is available to students and prospective students a counselling service which will assist students in making academic, per-

sonal, and financial decisions. In addition to the counsellors, the department heads and general staff can be utilized in aiding the individual student with any problems.

D. APTITUDE TESTS

Aptitude tests will be written by any or all students at the discretion of the Registrar.

II. FEES

A. ANNUAL FEES

The present fee structure is as follows, however these are subject to change from time to time:—

	Tuition	Student Activity	Caution Account	Accident Insurance	Total
First-year students—					
First term	$60.00	$20.00	$10.00	$3.00	$93.00
Second term	90.00	*Nil*	*Nil*	*Nil*	90.00
Second-year students—					
Third term	60.00	20.00	10.00	3.00	93.00
Fourth term	90.00	*Nil*	*Nil*	*Nil*	90.00

1. Arrangements have been made to provide accident insurance for each student enrolled at our Institute.

2. Students re-entering the Institute for the second and fourth terms, after not attending the Institute for one or more terms, must pay a $10 student activity fee and a $10 caution account deposit and a $1.50 insurance fee.

3. All cheques and money orders must be payable to the British Columbia Institutue of Technology.

4. All fees are payable prior to the commencement of classes.

5. A student whose fees are not paid within 14 days after the commencement of each term will be excluded from classes and his registration cancelled.

6. If a student, whose registration has been cancelled because of non-payment of fees, applies for reinstatement and his reinstatement has been approved by the Registrar, he will be required to pay a reinstatement fee of $10 together with all outstanding fees before he is permitted to resume classes.

B. MISCELLANEOUS FEES

Application and registration	$5.00
Re-read of final marks	5.00
Transcript of marks	2.00
Duplicate diploma	3.00
Reinstatement fee	10.00

C. REFUND OF FEES

(*a*) From the date of commencement of the term until 14 days later, inclusive of both dates:

(1) Tuition—complete refund.
(2) Caution account—balance of account.
(3) Student activity—complete refund.
(4) Accident insurance—complete refund.

(*b*) From the day following the last day specified in (*a*) above until 15 days later, inclusive of both dates:
(1) Tuition—50 per cent refund.
(2) Caution account—balance of account.

(*c*) From the day following the last day specified in (*b*) above until 15 days later, inclusive of both dates:
(1) Tuition—25 per cent refund.
(2) Caution account—balance of account.

(*d*) From the day following the last day specified in (*c*) above until the end of the term:
(1) Tuition—no refund.
(2) Caution account—balance of account.

D. Withdrawal

Students must withdraw officially through the Registrar's Office.

Students who are requested to withdraw from a course for reasons of discipline or unsatisfactory progress may forfeit any right to a refund under this section.

E. Additional Expenditures

1. *Textbooks, Instruments, and Supplies.*—The cost of textbooks, instruments, and supplies varies according to the programme, from approximately $60 to $125. The Institute bookstore carries a complete line of draughting and writing supplies. Students are advised not to make any purchases until they have received a book list showing the required texts.

2. *Medical Insurance.*—Students may obtain medical insurance by arrangement with the British Columbia Medical Plan. By Order in Council of the Provincial Government, all private companies have been prohibited by an Act of the Provincial Legislature from paying for physicians' and surgeons' services effective July 1, 1968. Students are advised to confirm that they are covered under their parents' British Columbia Medical Plan; should this not be the case, students are advised to make their own arrangements with the British Columbia Medical Plan. Pamphlets outlining the details are available from the Registrar's Office.

III. FINANCIAL ASSISTANCE

A. Government of British Columbia Scholarships

This award is available for the current year to a student who undertakes a full-year programme at the British Columbia Institute

of Technology. Candidates for awards applicable to the session 1971–72 will be considered on the basis of standing received in the final examinations for 1970–71. Candidates at the British Columbia Institute of Technology must take the final examinations set by the Institute in June; those in Grade XII or XIII must write the examinations set in June by the British Columbia Department of Education, and make application at the principal's office of the secondary school attended. Eligible applicants who obtain first-class standing will be granted three-quarters of the tuition fee. Awards of one-half and one-third the tuition fee will also be made to the Province's top second-class students.

B. Government of British Columbia Bursaries

This award is available for the current year to a student who undertakes a full-year programme at the British Columbia Institute of Technology. Awards are made only to students who can provide evidence of financial need and an academic standing acceptable to the British Columbia Student Aid Committee. The amount of the award is dependent primarily on need. Normally the amount ranges from $100 to $150, though in exceptional cases up to $400 per academic year may be authorized. Those persons attending British Columbia Grade XII or Grade XIII may obtain application forms from their secondary school Principal. Those students attending B.C.I.T. may make application to the Registrar's Office during the spring of Term 2.

C. British Columbia Institute of Technology Scholarship and Bursary Fund

The British Columbia Institute of Technology Scholarship and Bursary Fund has been established through private means, whereby awards are made annually by the trustees of the Fund to deserving students of the Institute. Private contributions from commerce and industry and other interested persons are being received and may or may not be designated for use in encouraging study in a particular course of study given by the Institute. Such contributions will be deductible for income-tax purposes. Pages 64 to 76 contain the details of the contributions. Inquiries concerning financial aid should be directed to the office of the Registrar.

D. The Canada Student Loans Plan

The maximum that may be obtained under this plan is $1,000 per year and not more than $2,000 over two years. The Canada Student Loans Plan was set up to supplement family and other financial sources available to students, not to replace them. Loans are made only if the student can establish that the financial re-

sources available, including those of the parents, are not sufficient to meet what the awarding authority considers to be reasonable costs for the academic year.

Loans are interest-free while the student is enrolled in an eligible post-secondary educational institution, and are repayable with interest commencing six months after graduation.

Loan applicants must establish residence requirements and be academically qualified before being eligible.

For application forms and further information inquire at the Co-ordinator of Student Affairs office (209).

IV. PLACEMENT SERVICE

The Student Placement Centre, staffed by Canada Manpower personnel, is available to all students of the Institute.

This office, besides providing a counselling and employment service, arranges seminars and interviews with national and local employers of the technologist.

To assist the student in further development of his career plan, a current library of information on careers in many industries is maintained in the Centre.

V. LIVING ACCOMMODATION

There are no dormitories connected with the Institute. Students may obtain room and board in the vicinity of the campus at a reasonable rate (approximately $100 to $110 a month for three meals a day).

A list of accommodations will be available to students at the Co-ordinator of Student Affairs office (209), and a list will be issued to students at registration. An excellent cafeteria provides economical services for students.

VI. ACADEMIC AWARDS

A. Diplomas (Dipl.T.)

Graduates of the British Columbia Institute of Technology will be awarded a nationally recognized Diploma of Technology. An honours diploma will be awarded to those students who obtain a first-class honours standing (80 per cent average or better) in each of Terms 3 and 4. Duplicate diplomas will be issued on payment of a fee of $3.

B. The British Columbia Institute of Technology Honour Awards

The Academic Award will be presented to the top academic student in his graduating year.

The Citizenship Award will be presented to the student who shows reasonable academic standing, a reputation for mature personal relations with both staff and students, and a record of active participation in student activities.

C. Convocation Exercises

Convocation exercises take place as announced in the yearly academic calendar, and diplomas are presented only at these exercises.

VII. THE CURRICULUM

A. Programme of Studies

The academic year consists of two separate consecutive terms. Examinations are written and credit is given for the successful completion of each term. Students may interrupt their studies after completion of any term. Permission by the Board of Admissions is required before a student is allowed to change his programme, and only one transfer is permitted.

B. Determination of Standing

Final standing is determined on the basis of term work and the results of examinations. A minimum of 50 per cent in each subject is required for a credit standing. Standing is computed according to the following schedule:

First class	80% or more
Second class	65% to 79%
Credit	50% to 64%
Failure	Below 50%

The symbol "A" (ægrotat) indicates that the student was absent from the final examination because of medical reasons but was granted standing on the basis of the year's work. "Ægrotat" standing may apply to all subjects or to a single subject. A copy of the final report is mailed to the student's home address as soon as possible after the results are known.

C. Failure and Repetition

A student who fails a term may be permitted to repeat the term only at the discretion of the Principal.

D. Appeals in Regard to Final Marks

Final examinations may be re-read if a written request is submitted to the Registrar within 10 days after the results are mailed to students. A fee of $5 is required for each paper which is appealed. This fee will be refunded in full if, as a result of re-reading, the original mark is favourably adjusted.

E. Transcripts

A fee of $2 is charged for each transcript of an undergraduate's or graduate's marks. Transcripts are available from the Registrar's Office.

VIII. REGULATIONS REGARDING CONDUCT, DISCIPLINE, AND ATTENDANCE

It is assumed that all students enrolled at the British Columbia Institute of Technology come for a serious purpose, and that they will conform cheerfully to all regulations.

(*a*) Students are expected to conduct themselves in an exemplary fashion at all times and pay diligent attention to their studies. If the Principal believes a student's conduct is such that it is detrimental to the interest of the Institute, he may be excluded from further attendance. In assessing a student's capability, the Principal will take into consideration his conduct and attitude, both on and off the campus. A student who has been expelled or suspended will not be admitted to the Institute grounds or buildings.

(*b*) The Institute cannot be held responsible for debts incurred by student organizations.

(*c*) If, through his carelessness or negligence, a student damages the property of the Institute, he shall be held responsible. If the damage is caused by students whose names are not known, the cost of repairing the damage may be assessed equally among all students enrolled at the Institute.

(*d*) A student will not be permitted to borrow or remove any apparatus or tools except by the written authority of the Principal or his delegate.

(*e*) Consumption of intoxicating beverages is not permitted on property belonging to the Institute. Violation of this regulation may result in expulsion.

(*f*) General supervision over all forms of entertainment given under the auspices of a student organization come under the jurisdiction of the Principal.

(*g*) All students are required to dress in a neat and tidy manner in accordance with normal business standards. For men this means the wearing of the following attire on the campus:

(i) Shirt and tie.

(ii) Business suit, or sports coat or blazer with suitable trousers.

(iii) In laboratory and shops a laboratory coat will be worn in place of the coats or blazers mentioned in item (ii).

Women should dress in a manner acceptable in a business setting.

(*h*) Regular attendance in lectures, seminars, and laboratory periods is required of all students. If a student is absent for any cause other than illness for more than 10 per cent of the time prescribed for any subject, he or she may be prohibited from writing the final examination in that subject. In case of illness or other unavoidable cause of absence, the student should communicate immediately with his department head, stating the cause of absence. Special regulations governing attendance in clinical experience areas are prescribed by the Health Department.

IX. CHANGES IN CURRICULA AND REGULATIONS

Although it is proposed to adhere to the programme of study as set forth in the Calendar, the Institute reserves the right to make, without prior notice, whatever changes are deemed necessary to either the programmes of study or the regulations. The Institute reserves the right to cancel any programme.

X. STUDENT ASSOCIATION

All students registered in the Institute are members of this Association. The governing body of the Association is the Students' Administrative Council, composed of officers elected by the student body. The Council represents the student body and administers student funds as outlined in the constitution of the Student Association.

XI. LOCKER FACILITIES

Full-length locker space is provided for the safe storage of personal effects. Students are warned to have identification marks—preferably names and addresses—on all their books, instruments, and other effects. All personal valuables should be kept on the student's person or secured in his locker. The Institute cannot accept responsibility for any loss of, or damage to, student's personal property.

XII. LIBRARY

The new library building, with a seating capacity for 500 students and space for over 100,000 volumes, was opened in the fall of 1968.

The Library collections number over 25,000 volumes, including representative works in all fields in which the Institute, the British Columbia Vocational School—Burnaby, and the University of British Columbia's Division of Industrial Education give instruction. In addition, the Library subscribes to over 900 periodicals and a variety of other materials selected to support these curriculums. Free access to the reference and general collections is permitted to all students at all times, with the exception of those materials in heavy demand which have been placed on " reserve " at the circulation desk.

The Library provides study carrells and other special study facilities, such as the student typing room, where typewriters and calculating machines are available; audio-visual carrells equipped for listening to tapes and viewing filmstrips and filmloops; teaching machines; the microfilm reading room; and Xerox copying facilities.

A handbook describing the facilities and services of the Library, and regulations governing Library use, will be distributed during the student orientation period. Information regarding Library tours and other Library instruction will be posted in the Library entrance.

XIII. INSTRUCTIONAL COMMUNICATIONS DEPARTMENT

The basic functions of the Instructional Communications Department are twofold. First, to provide service to the Faculty in facilitating instruction through productive use of media and technology from curriculum planning to actual implementation of learning. Second, to co-ordinate in-service education programme in the theory, methodology, and technology of instruction.

The Department provides assistance to the Faculty in selection, preparation, and application of the newer instructional media to their curriculum requirements.

It maintains the Institute's media library and provides for reference, rental, preview, and purchase of films, slides, videotapes, and other media from major sources throughout the world.

Based on continuing research in educational technology, the Department provides assistance to the Faculty in co-ordinating the design and use of advanced instructional systems such as, CCTV, learning lab., multimedia rear screen projection systems, and individual study facilities.

Limited media facilities are available to students for use in instructional projects.

XIV. STAFF AND STUDENT HEALTH SERVICES

A staff and student health service is available in Room 138. Personnel comprises a part-time doctor and two nurses, one with public health training.

The aim of the service is to prevent disease. This is done by immunizing students, where necessary, against those diseases for which an efficient agent has been developed. Though not mandatory, all students are encouraged to take advantage of this protection. Through the Department of Tuberculosis Control, a chest survey is offered to all personnel once a year. It is hoped in the future to offer some type of dental programme.

For those diseases for which no recognized prevention is available, the health service offers a first-line defence. This is done by counselling, and treatment of the acute phase of illnesses or injuries.

At all times it is the object of the health service to co-operate with the individual's practising physician, reference being made to them when definite or long-term treatment is necessary.

A minimal-cost dental service is available at the Faculty of Dentistry, University of British Columbia, undertaken by the dental students under supervision.

In the Vancouver General Hospital Out-patients' Department, a dental clinic is open from 8.30 a.m. to 4.30 p.m. week-days. Emergency service is available in the hospital emergency after hours for students requiring treatment.

XV. ATHLETICS

Men and women who enrol at the B.C.I.T. will find a complete programme of extra-mural athletics. As a member of the British Columbia Junior Collegiate Athletic Association, varsity teams include ice hockey, rugger, wrestling, basketball, volleyball, track; and for the women, grass hockey, volleyball, basketball, track, and cross country—all of which are administered by the Athletic Council of the Institute.

In addition, broad programmes of intra-mural and recreational sports are offered through the Mens and Womens Intra-mural Committee of the Students' Council. There is a place for everyone in this programme.

EXTENSION DIVISION

I. Information

For complete information on the Extension Division, write Vice-Principal, Extension, British Columbia Institute of Technology, 3700 Willingdon Avenue, Burnaby 2, British Columbia, or phone 434-5722.

II. Aims and Objectives

The British Columbia Institute of Technology is an institution for advanced technical education, and will continue to make its excellent facilities available for continuing education in the evening in a variety of technical and commercial fields.

Any of the evening programmes offered demand not only ability, but strong motivation and serious effort on the part of the student.

As the demand grows, the Institute, in co-operation with industry through its advisory committees, will expand the number of subjects offered to satisfy the post-secondary technical training needs of almost every segment of trade, commerce, and industry.

The function of the Extension Division is to determine and, if necessary, attach priorities to the advanced technical training needs of adults in industry and then to design programmes and courses to meet these needs so that adults may quickly and efficiently obtain needed skills and knowledge and at the same time integrate this new knowledge with their respective backgrounds.

Continuing education at an advanced level with high standards of instruction is our goal.

III. What the Extension Division Offers

1. The Extension Division of the British Columbia Institute of Technology will give priority to post-secondary training programmes at the level and generally related to the full-time programmes in engineering, business, or health, provided there is both a demand and need for such training. British Columbia Institute of Technology was designed and equipped and is expected to serve these needs.

2. The Extension Division of the British Columbia Institute of Technology will co-operate with organizations to present advanced technical training to assist students to complete the syllabi of associations. Where possible this education will be offered through regular extension courses available under programmes in 1. The Extension Division also will encourage these associations to accept B.C.I.T. examinations as credit for their respective programmes.

3. Some students seek only one course in a subject. They may do so even though a course may be part of a programme. The

Extension Division will also offer some general non-programme courses.

4. The British Columbia Institute of Technology will assist in the design and offer advanced technical courses to a company, but preferably to an industry, provided such training is not already available at a convenient time or in the form needed.

5. A further important function of the Extension Division is to provide a service of continuing education to the graduates of this Institute or of similar programmes.

6. The Extension Division, as a by-product of its regular function, will provide a service to day students who could not be accommodated. Students with advanced credit may require Extension courses to proceed to the next level in the day programme. Similarly, students of the day programme who fail some subjects may wish to repeat these subjects through the Extension Division while working and then return to full-time day studies at the next level.

7. The Extension Division has assumed some responsibility to carry on the work of the British Columbia Work Study Centre.

8. The Extension Division may also provide preparatory courses to entry to the British Columbia Institute of Technology if this need must be met and is not adequately served through other educational institutions in the community.

9. When space permits, the Extension Division will facilitate and encourage meetings and seminars of an Educational nature or value. These should be related to the educational scope of the Institute.

British Columbia Institute of Technology
Scholarship and Bursary Fund

BRITISH COLUMBIA INSTITUTE OF TECHNOLOGY SCHOLARSHIP AND BURSARY FUND

Contributors, 1969

ACRES WESTERN LIMITED ($25)

This donation to be directed to a deserving student at the Institute of Technology, and to be awarded at the discretion of the trustees of the Scholarship and Bursary Fund.

AMALGAMATED CONSTRUCTION ASSOCIATION OF BRITISH COLUMBIA ($250)

Amalgamated Construction Association of British Columbia will award $250 to a student in the Building Technology.

AMERICAN CAN OF CANADA LTD. ($100)

This donation to be directed to a deserving student at the Institute of Technology, to be awarded at the discretion of the trustees of the Scholarship and Bursary Fund.

AMERICAN SMELTING AND REFINING COMPANY ($200)

American Smelting and Refining Company will award two $100 bursaries or scholarships to students in the Mining Technology.

AMERICAN SOCIETY FOR METALS ($300)

The American Society for Metals will award two $150 scholarships or bursaries to students in the Chemical and Metallurgical Technology.

ANACONDA ELECTRONICS LTD. ($50)

This donation has been directed to a deserving student at the Institute of Technology, to be awarded at the discretion of the trustees of the Scholarship and Bursary Fund.

ASSOCIATION FOR SYSTEMS MANAGEMENT ($150)

The Association for Systems Management will award a $150 scholarship to a student in Computer Programming and Systems Technology.

BAY FOREST PRODUCTS LTD. ($100)

Bay Forest Products Ltd. will award a $100 scholarship or bursary to a student in the Forest Resource Technology.

BETHLEHEM COPPER CORPORATION LTD. ($500)

Bethlehem Copper Corporation Ltd. will award bursaries or scholarships in the total amount of $500 to students in the Chemical and Metallurgical Technology.

THE BIRKS FAMILY FOUNDATION ($100)

This donation has been directed to a deserving student at B.C.I.T., to be awarded at the discretion of the trustees of the Scholarship and Bursary Fund.

BRITISH COLUMBIA FOREST PRODUCTS LTD. ($500)

British Columbia Forest Products Limited will award two $250 scholarships to second year students—one in the Forest Resource Technology and one in the Instrumentation and Systems Technology.

BRITISH COLUMBIA HOTELS ASSOCIATION ($500)

The British Columbia Hotels Association will award bursaries or scholarships in the total amount of $500 to students in the Hotel, Motel, and Food Service Management Technology.

BRITISH COLUMBIA HYDRO AND POWER AUTHORITY ($450)

The British Columbia Hydro and Power Authority will award two bursaries and one scholarship of $150 each to students at the Institute of Technology, to be awarded at the discretion of the trustees of the Scholarship and Bursary Fund.

BRITISH COLUMBIA MOTELS AND RESORTS ASSOCIATION ($100)

The British Columbia Motels and Resorts Association will award a $100 bursary to a student in the Hotel, Motel, and Food Service Management Technology.

BRITISH COLUMBIA SECTION, CANADIAN INSTITUTE OF MINING AND METALLURGY ($140)

The British Columbia Section, Canadian Institute of Mining and Metallurgy, will award a $140 scholarship to a student in the Natural Gas and Petroleum Technology or the Chemical and Metallurgical Technology.

BRITISH COLUMBIA SUGAR REFINING COMPANY, LIMITED ($250)

British Columbia Sugar Refining Company, Limited, will award a $250 scholarship or bursary, to be awarded at the discretion of the trustees of the Scholarship and Bursary Fund.

CANADIAN BROADCASTING CORPORATION ($200)

This donation has been directed to deserving students at the Institute of Technology, to be awarded at the discretion of the trustees of the Scholarship and Bursary Fund.

CANADIAN FOREST PRODUCTS LTD. ($500)

This donation has been directed to deserving students at the Institute of Technology, to be awarded at the discretion of the trustees of the Scholarship and Bursary Fund.

CANADIAN INFORMATION PROCESSING SOCIETY, VANCOUVER SECTION ($150)

Canadian Information Processing Society, Vancouver Section, will award a $150 scholarship or bursary to a student in the Computer Programming and Systems Technology.

CANADIAN PULP AND PAPER ASSOCIATION ($250)

The Canadian Pulp and Paper Association will award two bursaries to students in the Pulp and Paper Option of the Forest Resource Technology.

CANADIAN RESTAURANT ASSOCIATION ($200)

The Canadian Restaurant Association will award a $200 bursary to a student in the Hotel, Motel, and Food Service Management Technology.

CANADIAN TELEPHONES AND SUPPLIES LTD. ($50)

This donation has been directed to a deserving student at the Institute of Technology, to be awarded at the discretion of the trustees of the Scholarship and Bursary Fund.

CANADA PACKERS LIMITED ($150)

Canada Packers Limited will award a $150 scholarship or bursary to a student in the Biological Sciences Technology.

CANADA SAFEWAY LIMITED ($150)

Canada Safeway Limited will award a $150 scholarship or bursary to a student in the Biological Sciences Technology.

THE CATTERMOLE-TRETHEWEY CONTRACTORS LTD. ($100)

This donation has been directed to a deserving student at the Institute of Technology, to be awarded at the discretion of the trustees of the Scholarship and Bursary Fund.

CLUB MANAGERS' ASSOCIATION OF AMERICA ($175)

The Club Managers' Association of America will award a $175 bursary to a student in the Hotel, Motel, and Food Service Management Technology.

COMINCO LTD. ($500)

Cominco Ltd. will award one scholarship of $250 to a student in the Mining Technology and one scholarship of $250 to a student in the Chemical and Metallurgical Technology.

COMPUTECH CONSULTING CANADA LTD. ($150)

Computech Consulting Canada Ltd. will award a scholarship to a student in the Computer Programming and Systems Technology.

CRAIGMONT MINES LIMITED ($700)

Craigmont Mines Limited will award two $350 scholarships to students in any of the following technologies: Chemical and Metallurgical, Mining, or Surveying.

CROWN ZELLERBACH CANADA FOUNDATION ($1,000)

The Crown Zellerbach Canada Foundation will award four $250 bursaries. Students in the Forestry, Forest Products, Survey, Mechanical, Electrical and Electronics, Chemical and Metallurgical, Instrumentation and Systems, and Business Management Technologies are eligible for these awards.

DOMINION CONSTRUCTION CO. LTD. ($250)

Dominion Construction Co. Ltd. will award a $250 bursary to a deserving student in the Building Technology.

THE T. EATON CO. CANADA LIMITED SERVICE AWARDS ($500)

The T. Eaton Co. Canada Limited will award two $250 scholarships to students in the Marketing or Retailing Option of the Business Management Technology. Selection of winners is from the group of first-year students who are offered summer employment with Eatons between their first and second years.

ELECTRICAL EQUIPMENT ASSOCIATION OF BRITISH COLUMBIA ($100)

The Electrical Equipment Association of British Columbia will award a scholarship or bursary to a student in the Electrical and Electronics Technology.

ELECTRIC POWER EQUIPMENT LIMITED ($100)

Electric Power Equipment Limited will award a $100 bursary to a student in the Electrical and Electronics Technology.

ELWORTHY AND COMPANY LIMITED ($100)

Elworthy and Company Limited will award a $100 scholarship or bursary to a student in the Electrical and Electronics Technology.

ENDAKO MINES LTD. (N.P.L.) ($700)

Endako Mines Ltd. (N.P.L.) will award two $350 scholarships to students in any of the following technologies: Chemical and Metallurgical, Mining, or Surveying.

FALCONBRIDGE NICKEL MINES LIMITED ($300)

Falconbridge Nickel Mines Limited will award bursaries or scholarships in the total amount of $300 to students in the Mining or Surveying Technologies.

FINNING TRACTOR & EQUIPMENT CO. LTD. ($500)

Finning Tractor & Equipment Co. Ltd. will award a $200 scholarship to a student in the Business Management Division. The balance of $300 will be awarded at the discretion of the trustees of the Scholarship and Bursary Fund.

FISHERIES ASSOCIATION OF BRITISH COLUMBIA ($150)

Fisheries Association of British Columbia will award a $150 scholarship or bursary to a student in the Biological Sciences Technology.

FOOD SERVICES EXECUTIVES ASSOCIATION ($250)

The Food Services Executives Association will award a $250 scholarship to a student in the Hotel, Motel, and Food Service Management Technology.

FRASER VALLEY MILK PRODUCERS ASSOCIATION ($150)

The Fraser Valley Milk Producers Association will award a $150 scholarship or bursary to a student in the Biological Sciences Technology.

DEAN H. GOARD AWARD ($100)

This donation has been directed to a deserving student at the Institute of Technology, to be awarded at the discretion of the trustees of the Scholarship and Bursary Fund.

HOOKER CHEMICALS LIMITED ($100)

This donation has been directed to a deserving student at the Institute of Technology, to be awarded at the discretion of the trustees of the Scholarship and Bursary Fund.

HOYLES, NIBLOCK INTERNATIONAL LTD. ($150)

Hoyles, Niblock International Ltd. will award a $150 bursary to a student in the Electrical and Electronics Technology.

HUDSON'S BAY COMPANY ($150)

Hudson's Bay Company will award a $150 bursary to a student in the Business Management Division.

I.C.L. ENGINEERING LTD. ($300)

I.C.L. Engineering Ltd. will award a bursary or bursaries in the total amount of $300 to a student or students in the Mechanical Technology.

THE HILDA M. INGHAM MEMORIAL SCHOLARSHIP AND BURSARY FUND ($250)

The Hilda M. Ingham Memorial Scholarship and Bursary Fund has been donated by the North Shore Private Hospital and is to be awarded to students in the Nursing Programme of the Health Division.

INTERNATIONAL BUSINESS MACHINES COMPANY LIMITED ($200)

International Business Machines Company Limited will award a $200 bursary to a student in the Computer Programming and Systems Technology.

INTERNATIONAL NICKEL COMPANY OF CANADA LIMITED ($300)

International Nickel Company of Canada Limited will award one or more scholarships with a value from a minimum of $100 to a maximum of $300 to students in the Engineering Division.

INTERNATIONAL POWER AND ENGINEERING CONSULTANTS LIMITED ($300)

International Power and Engineering Consultants Limited will award three $100 bursaries—one bursary each to students in Civil and Structural Technology, Electrical and Electronics Technology, and Mechanical Technology.

JOHNSTONE FABRICATORS LTD. ($150)

This donation has been directed to a deserving student at the Institute of Technology, to be awarded at the discretion of the trustees of the Scholarship and Bursary Fund.

JONES ASSOCIATES INC. ($300)

Jones Associates Inc. will award two scholarships of $150 to students in the Surveying Technology.

KELLY, DOUGLAS & COMPANY LIMITED ($150)

Kelly, Douglas & Company Limited will award a $150 bursary to a student in the Marketing Technology.

J. S. MACEY AWARD ($50)

This donation is directed to a deserving student in the Pulp and Paper Option of the Forest Resource Technology.

GEORGE MACBRYER SCHOLARSHIP

The George MacBryer Scholarship has been established by the Truck Loggers' Association to honour the memory of the late George MacBryer. An initial donation was made by the Truck Loggers' Association ($1,000), and additional donations have been received from Randall Logging Limited ($100) and Nalos Logging Limited ($200).

MACMILLAN BLOEDEL LIMITED ($500)

MacMillan Bloedel Limited will award one scholarship of $250 to a student in the Forestry Programme and one scholarship of $250 to a student in the Forest Products Programme of the Forest Resource Technology.

MCCARTER, NAIRNE AND PARTNERS ($150)

McCarter, Nairne and Partners will award a $150 scholarship to a student in the Building Technology.

NORTH WEST PLASTER BUREAU ($150)

The North West Plaster Bureau will award a $150 scholarship to a student in the Building Technology.

PACIFIC LOGGING COMPANY LIMITED ($300)

This donation has been directed to a deserving student at the Institute of Technology, to be awarded at the discretion of the trustees of the Scholarship and Bursary Fund.

PLACER DEVELOPMENT, LIMITED ($700)

Placer Development, Limited, will award two $350 scholarships to students in any of the following technologies: Chemical and Metallurgical, Mining, or Surveying.

RAYONIER CANADA (B.C.) LIMITED ($1,050)

Rayonier Canada (B.C.) Limited will award three $350 scholarships—two scholarships to students in the Forest Products Pro-

gramme (one scholarship will be given in the Wood Option and one scholarship will be given in the Pulp and Paper Option) and one scholarship to a student in the Forestry Programme of the Forest Resource Technology. The awards are available to students who have completed the first year of their course and are proceeding into the second year.

READ JONES CHRISTOFFERSON LIMITED ($100)

Read Jones Christofferson Limited will award a $100 bursary to a student in either the Building Technology or Civil and Structural Technology.

RESEARCH INDUSTRIES LIMITED ($100)

This donation has been directed to a deserving student at the Institute of Technology, to be awarded at the discretion of the trustees of the Scholarship and Bursary Fund.

WILLIAM ROBINSON LIMITED ($150)

William Robinson Limited will award a $150 scholarship to a student in the Biological Sciences Technology.

ROYAL CITY FOODS LTD. ($150)

Royal City Foods Ltd. will award a $150 scholarship or bursary to a student in the Biological Sciences Technology.

RUSSELL FOOD EQUIPMENT LIMITED ($300)

Russell Food Equipment Limited will award two $150 scholarships to students in the Hotel, Motel, and Food Service Management Technology.

SANDWELL AND COMPANY LIMITED ($250)

This donation has been directed to deserving students at the Institute of Technology, to be awarded at the discretion of the trustees of the Scholarship and Bursary Fund.

SCHLAGE LOCK COMPANY OF CANADA LTD. ($100)

This donation has been directed to a deserving student at the Institute of Technology, to be awarded at the discretion of the trustees of the Scholarship and Bursary Fund.

SILVER STANDARD MINES LIMITED ($1,000)

This donation has been directed to deserving students at the Institute of Technology, to be awarded at the discretion of the trustees of the Scholarship and Bursary Fund.

H. A. SIMONS (INTERNATIONAL) LTD. ($750)

This donation has been directed to deserving students at the Institute of Technology, to be awarded at the discretion of the trustees of the Scholarship and Bursary Fund.

STANDARD OIL COMPANY OF BRITISH COLUMBIA LIMITED ($250)

Standard Oil Company of British Columbia Limited will award a $250 scholarship or bursary to a student in the Business Management Division.

SUN-RYPE PRODUCTS LIMITED ($150)

Sun-Rype Products Limited will award a $150 scholarship to a student in the Biological Sciences Technology.

TAHSIS COMPANY LTD. ($500)

Tahsis Company Ltd. will award two $250 scholarships—one to a student in the Forest Products Programme and one to a student in the Forestry Programme of the Forest Resource Technology.

THOMPSON, BERWICK, PRATT & PARTNERS ($75)

This donation has been directed to a deserving student at the Institute of Technology, to be awarded at the discretion of the trustees of the Scholarship and Bursary Fund.

L. A. VARAH LIMITED ($100)

This donation has been directed to a deserving student at the Institute of Technology, to be awarded at the discretion of the trustees of the Scholarship and Bursary Fund.

JACK WOODWARD MEMORIAL SCHOLARSHIP AND BURSARY FUND

The Jack Woodward Memorial Scholarship and Bursary Fund has been established to honour the memory of the late Head of the Chemical and Metallurgical Technology. The Fund is supported by an annual contribtuion of $200 from Eldorado Nuclear Limited.

WOODWARD STORES LTD. ($300)

Woodward Stores Ltd. will award $150 scholarship or bursary to a student in the Marketing Technology, and $150 scholarship or bursary to a student in the Biological Sciences Technology.

Business Management Course Enrichment Projects Fund

This Fund is available without restrictions to the Director of Business Management Division for special projects supplementary to the specified programme of studies. In the past, the Fund has underwritten the cost of entering a team in the International Inter-university Marketing Simulation Competition sponsored by Michigan State University and Sylvania Electric, the cost of special speakers, seminars, etc. Contributors to this Fund are:

Canadian Lead and Alloys Ltd.
Hudson's Bay Company.
Simpsons-Sears Limited
Spider Looms Ltd.
W. M. Young, Esq.

Hudson's Bay Company Service Awards

These awards are available to first-year students proceeding to their second year in one of the Business Management Technologies. The award comprises payment of tuition fees and dues for the second year, summer employment, and part-time employment according to availability during the academic year. Applicants for these awards should have some interest in and aptitude for retailing, but no obligation of any kind devolves on a successful candidate. Applications are invited from first-year students in March of each year. Selections of recipients are from a list recommended by the Institute.

Student Caution Account Donations

Students from the following technologies donated the balances of their caution-account moneys to be used for bursaries to be awarded at the discretion of the trustees of the Scholarship and Bursary Fund, or to be used for emergency loans to students in need.

Building Technology students	$420
Chemical and Metallurgical Technology students	265
Civil and Structural Technology students	320
Electrical and Electronics Technology students	1,455
Biological Sciences Technology students	340
Forestry Resource Technology students — Forestry Programme	818
Instrumentation and Systems Technology students	355
Medical Laboratory Technology students	750
Mining Technology students	120

Academic Medals

Silver medals are awarded annually to the graduate who has achieved the highest academic standing in his programme of studies. The following medals were awarded at the 1969 Convocation Ceremonies. As indicated, most of the awards include a $100 prize.

Outstanding Academic Achievement—The Governor General's Silver Medal.

Biological Sciences:

Food Production—Agricultural Chemical Industry of Vancouver ($100).

Food Processing—Food Executives Club Award ($100).

Broadcast Communications—The British Columbia Association of Broadcasters' Award ($100).

Building — The Architectural Institute of British Columbia Award ($100).

Business Management:

Administrative Management—The Eaton Award ($100).

Computer Programming and Systems—The British Columbia Telephone Company Award ($100).

Financial Management (Accounting Option)—The Society of Industrial Accountants of British Columbia Award ($100).

Financial Management (Finance Option)—The Financial Management Advisory Committee Award ($100).

Marketing (Marketing Management Option)—The Vancouver Sun Award ($100).

Marketing (Retail Marketing Option)—The Retail Council of Canada Gold Medal Award and Western Wholesale Drug Ltd. Prize ($100).

Chemical and Metallurgical:

Industrial Chemistry — The Chemical Institute of Canada Award.

Physical Metallurgy—The Wire Rope Industries of Canada, Limited Award ($100).

Civil and Structural—The Col. W. G. Swan Award ($100).

Electrical and Electronics:

Electronics—The Lenkurt Electric Co. of Canada, Ltd. Award ($100).

Power — The Federal Pacific Electric of Canada Award ($100).

Forest Resource:

Forestry—The Council of the Forest Industries of British Columbia Award ($100).

Forest Products (Wood Option)—The Council of the Forest Industries of British Columbia Award ($100).

Forest Products (Pulp and Paper Option)—The British Columbia Institute of Technology Award ($100).

Health:

Medical Laboratory—The Canadian Society of Laboratory Technologists, British Columbia Branch Award ($100).

Medical Radiography—The British Columbia Radiological Society Award ($100).

Nursing—The Nurses' Association of Lions Gate Hospital Award ($100).

Hotel, Motel, and Food Service Management—The British Columbia Hotels' Association Award ($100).

Instrumentation and Systems—The Instrument Society of America, The J. J. Garey Memorial Award ($100).

Mechanical—The Canadian Manufacturers' Association Award ($100).

Mining—The British Columbia Section, Canadian Institute of Mining and Metallurgy Award ($100).

Natural Gas and Petroleum—The British Columbia Institute of Technology Award ($100).

Surveying—The David H. Burnett and Associates Award ($100).

Prizes

The following prizes were awarded at the 1969 Convocation Ceremonies to graduates who had gained the highest standing in specific subjects related to the pertinent industry or who had shown the greatest combination of academic ability and leadership to warrant unusual recognition.

BUILDING

THE CANADIAN STRUCTURAL CLAY ASSOCIATION awarded a prize of $100 to the student who had obtained outstanding achievement in the Building Technology.

BUSINESS MANAGEMENT

The INSTITUTE OF CHARTERED ACCOUNTANTS OF BRITISH COLUMBIA awarded a prize of $25 to the student who had obtained the highest marks in Auditing 90.346 and 90.446.

CIVIL AND STRUCTURAL

The BRITISH COLUMBIA ASSOCIATION OF PROFESSIONAL ENGINEERS (MUNICIPAL DIVISION) presented a prize to the graduate in Civil and Structural Technology who received the highest standing in Municipal Engineering.

FOREST RESOURCE

THE CANADIAN PULP AND PAPER ASSOCIATION (PACIFIC COAST BRANCH) awarded a prize of $250 and a scroll to the outstanding graduate in the Pulp and Paper Option of the Forest Resource Technology.

THE VANCOUVER HOO HOO CLUB, NO. 48, awarded two prizes of $125 each to outstanding students in the Wood Option of the Forest Resource Technology.

THE CANADIAN INSTITUTE OF FORESTRY Prize was awarded to the outstanding graduate in the Forestry Programme of the Forest Resource Technology.

HEALTH

THE WARNER-CHILCOTT LABORATORIES CO. LIMITED Award was made to the graduate in the Health Technology who had gained the highest general proficiency in this programme of studies.

THE METROPOLITAN BIO-MEDICAL LABORATORIES LTD. awarded four prizes of $100 each to the best student in Bacteriology, Bio-Chemistry, Hæmatology, and Nuclear Medicine, Health Technology.

THE ORTHO PHARMACEUTICAL (CANADA) LTD. Prize was awarded to the outstanding graduate in the Medical Laboratory Programme who had gained the highest standing in hæmatology and immuno-hæmatology.

HOTEL, MOTEL, AND FOOD SERVICE MANAGEMENT

THE GEORGIA, BAYSHORE WESTERN HOTELS "HARD CORPS" Prize of $125 each was awarded to four students in the Hotel, Motel, and Food Services Management Technology.

THE HARRISON HOTEL awarded a prize to two students in Human Relations.

MECHANICAL

THE INSTITUTION OF MECHANICAL ENGINEERS Book Prize was awarded to the graduate in the Mechanical Technology who gained the highest marks in the other option from that followed by the student who was awarded the Canadian Manufacturers' Association medallion.

Interim Prerequisites

During an interim period some senior secondary schools in British Columbia may not have completed the conversion to the revised curriculum.

For this interim period only, the Institute may consider as sufficient prerequisite the appropriate major science programme which has been offered at the school at which the applicant studied.

Schedule of Prerequisites, 1970

GENERAL PREREQUISITE

Graduation from senior secondary school on the Academic-Technical Programme as prescribed by the Department of Education for the Province of British Columbia.

BUSINESS MANAGEMENT DIVISION

SPECIAL PREREQUISITES

Administrative Management.	*Nil.*
Broadcast Communications.	Hist. 12; Eng. Lit. 12.
Computer Programming and Systems—	
Business Systems.	*Nil.*
Computer Science.	Math 12.
Financial Management.	*Nil.*
Hotel, Motel, and Food Service Management.	*Nil.*
Marketing Management.	*Nil.*
Technical Management.	Math. 12.

ENGINEERING DIVISION

SPECIAL PREREQUISITES

Biological Sciences.	Math. 12; Chem. 11.
Building.	Math. 12; Phys. 11.
Chemical and Metallurgical.	Math. 12; Chem. 11; Phys. 11.
Civil and Structural.	Math. 12; Phys. 11.
Electrical and Electronics.	Math. 12; Chem. 11; Phys. 11.
Forest Resource—	
Forestry.	Math. 12.
Fish, Game and Parks.	Math. 12; Biology 11.
Forest Products.	Math. 12; Chem. 11.
Instrumentation and Systems.	Math. 12; Phys. 11; Chem. 11.
Mechanical.	Math. 12; Phys. 11.
Mining.	Math. 12; Phys. 11; Chem. 11.
Natural Gas and Petroleum.	Math. 12; Phys. 11; Chem. 11.
Surveying.	Math. 12; Phys. 11.

HEALTH DIVISION

SPECIAL PREREQUISITES

	1970	Applicants may be required to have the following prerequisites in 1971—
Biomedical Electronics.	Math. 12; Phys. 11; Chem. 11.	Math. 12; Phys. 11; Chem. 11.
Health Data.	Math. 12; Typing 11 or equivalent.	Math. 12; Typing 11 or equivalent.
Medical Laboratory.	Math. 12; Chem. 11; one other Science 11.	Math 12; two Science 11's; one Science 12 (Chemistry is suggested).
Medical Radiography.	Math. 12; two Science 11's.	Math 12; two Science 11's; one Science 12 (Chemistry is suggested).
Nuclear Medicine.	Math. 12; two Science 11's.	Math 12; two Science 11's; one Science 12 (Chemistry is suggested).
Nursing.	One Science 12.	One Science 12.
Public Health and Pollution Control.	Math. 12; two Science 11's.	Math 12; two Science 11's; one Science 12 (Chemistry is suggested).
Respiratory.	Math. 12; one Science 12; two Science 11's.	Math. 12; two Science 11's; one Science 12.

Commencing September, 1971, senior secondary counsellors and students are advised that B.C.I.T. Board of Admissions will be pleased to accept applicants who have graduated on the Academic-Technical Programme in any one of the three technical specialties and the Arts (Humanities) Specialty as indicated in the Administrative Bulletin for Secondary Schools (supplement to the 1967 edition), pages 14 and 15.

Expansion
Programme

From the opening of the British Columbia Institute of Technology in September of 1964, the physical plant, including buildings and other facilities, has been constantly expanded. The Government of British Columbia has provided the additional buildings and facilities to match the continuous growth in the student enrolment from just over 500 students in September, 1964, to 2,700 day-students in September, 1969.

During 1969 the Library, Audio Visual, and Bookstore Building was fully occupied. This building, used by all students on the campus, includes a reserve of space for further expansion. The Library is being well used now and the Bookstore at the opening of the fall term in 1969 provided efficient service for students and staff.

The addition to the Food Service Building that was completed in 1969 provided a Food Laboratory for the Hotel, Motel, and Restaurant Management Programme and two additional classrooms plus improved laboratories for the food courses of the Vocational School.

A new greenhouse and animals-holding building has been completed on the campus to service the Biological Sciences Technology and the Health Technology. This building will house the small animals used in the teaching process of the two technologies.

Landscaping of the campus was undertaken during 1969 and it has improved the setting of our buildings and added to the appearance of our campus. More landscaping remains to be done, but already our campus has become more attractive.

The playing-field and running-track built in 1968 were used this year and have been much appreciated by students and staff. Two new playing-fields have been cleared and levelled, and we hope that these can be prepared for use as soon as possible.

The Multi-Purpose Building, which includes a gymnasium, auditorium, students' offices, and a badly needed cafeteria, is under construction. This building has been carefully planned and when completed will be a great service to students.

A firm of architects has been commissioned to report on the feasibility of constructing student residences on the campus. At the present time students from out of town attending B.C.I.T. and B.C.V.S. have difficulty in finding suitable living accommodation in the area. Student residences are required, and it is hoped that they will be built in the near future.

Preliminary planning is under way looking toward the erection of another classroom, laboratory, and office building to provide for the increased numbers of students who will be enrolled in B.C.I.T. prior to 1975.

The Canadian Imperial Bank of Commerce plans to erect a branch bank on the campus and will also provide facilities for a student store and barber shop under the North Collanade of the original building. It is expected that this facility will be ready by the spring of 1970. It will provide a much-needed service for staff and students.

List of Programmes

BUSINESS MANAGEMENT DIVISION

- Administrative Management
- Broadcast Communication
- Computer Programming and Systems
- Financial Management
- Hotel, Motel, and Food Service Management
- Marketing Management
- Technical Management

ENGINEERING DIVISION

- Biological Sciences
- Building
- Chemical and Metallurgical
- Civil and Structural
- Electrical and Electronics
- Forest Resource—
  - Forestry
  - Forest Products
- Instrumentation and Systems
- Mechanical
- Mining
- Natural Gas and Petroleum
- Surveying

HEALTH DIVISION

- Biomedical Electronics
- Health Data
- Medical Laboratory
- Medical Radiography
- Nuclear Medicine
- Nursing
- Public Health and Pollution Control
- Respiratory

Business Management Division

The accelerated development in recent years of scientific knowledge and industrial productivity has increased the complexity of modern business. This has stimulated competition to a very high degree, and in order to maintain its ability to compete, management has had to rely on a more scientific approach to managing. Specialists in many fields are employed to gather, analyse, interpret, and present information for management's use. With the increasingly specialized nature of modern business, young persons about to enter business must not only be eager, intelligent, and hard working, but must have specialized training as well. The programmes within the Business Management Division are established and relevancy is maintained with the assistance of ten Advisory Committees. Consequently graduates from this programme are in high demand by prospective employers. Students will follow a prescribed course in one of the following technologies:—

Administrative Management
- Administration Option
- Manpower Management Option
- Economics and Statistics Option

Broadcast Communications
- Radio Production
- Television Production
- News-Radio and Television

Computer Programming and Systems
- Business Systems Option
- Computing Science Option

Financial Management
- Accounting Option
- Finance Option

Hotel, Motel, and Food Services Management
- Hotel, Motel Option
- Food Management Option

Marketing Management
- Retail Management Option
- Marketing Management Option
- Traffic and Transportation Management Option

Technical Management

Business Management Division

Administrative Management Technology

The Administrative Management Technology is designed to give the student a broad yet thorough understanding of modern business practices, and to fit him for efficient administrative performance. This technology provides the necessary background for young men and women who wish to enter positions in a wide range of businesses, industry, or government.

Following the basic subjects given in the earlier terms, the student will study a variety of interrelated subjects in the field of business. Course material covering the framework of the various subjects is supplemented by laboratory work designed to stimulate actual business problem situations. Business case discussions problem sessions, seminars, and field trips give the student full opportunity to take an active part in analysing problems, drawing conclusions from the data provided, making proposals, and suggesting solutions much as would be the case in actual situations. In this way the student gains confidence in his ability to participate in handling the many, varied problems of business, and develops a competence and adaptability in those administrative techniques so necessary for the successful manager.

In the second year of the programme, students may specialize in one of three fields by selecting a particular option. The options available are Administration, Manpower Management, and Economics and Statistics.

Administration Option

This option is broad in scope and gives the student a foundation in a variety of administrative subjects useful in entering a wide selection of business enterprises.

Administrative positions in this area involve such functions as planning, research, finance, and business organization. After appropriate job experience, opportunities would be at the intermediate level, such as office manager, department or branch manager.

Manpower Management Option

It is increasingly recognized that productivity in business and industry depends to a great extent on the development and utilization of human resources.

This option emphasizes those areas which are important to this purpose. The selection and placement of manpower, principles of psychology applied to administration, relations between management and labour, the training and development of manpower on the job are areas of study which are peculiar to the option.

Students electing to enter the Manpower Management Option should have a strong desire to take part in the management of people and should be prepared to examine and evaluate objectively the results of recent research in this field. Positions available in this area will involve the many aspects of manpower management, such as training, development, personnel selection, and industrial relations.

Economics and Statistics Option

The Economics and Statistics Option is designed to train students in the application of statistical techniques in a business setting. The student taking this option will gain a specialized knowledge of the methods of gathering statistics and utilizing statistical analysis to improve the decision-making process. Rewarding opportunties in a number of fields, including research and development, marketing research, production control and governmental statistical agencies, will be available to graduates of this course.

BUSINESS MANAGEMENT DIVISION

ADMINISTRATIVE MANAGEMENT TECHNOLOGY

YEAR 1 — *Term 1*

No.	Subject	Hrs. per Wk. Lec.	Lab.
10.131	Management in Industry	1	2
10.135	Economics	1	2
14.050	Introduction to Data Processing	2	2
14.182	Office Equipment	1	2
16.140	Accounting	2	3
20.180	Marketing	2	1
22.013	Business Mathematics and Statistics I	2	3
31.102	Business Writing and Contemporary Thought	2	1
	Common Tutorial	....	1
	Library and Research	....	4
		14	21

Term 2

10.221	Psychology	1	2
10.232	Administrative Practices	1	3
10.235	Economics	1	1
14.296*	Office Systems and Procedures	1	2
16.240	Accounting	2	3
20.280	Marketing	2	1
22.023	Business Mathematics and Statistics II	2	3
31.202	Business Writing and Contemporary Thought	2	2
	Common Tutorial	....	1
	Library and Research	....	4
		12	22

YEAR 2 — *Term 3*

No.	Subject	Admin. Option Hrs. per Wk. Lec.	Lab.	Man. Mgt. Option Hrs. per Wk. Lec.	Lab.	Econ. and Stat. Option Hrs. per Wk. Lec.	Lab.
10.307	Mathematics for Economics and Statistics	....	....	....	....	2	4
10.308	Mathematical Statistics and Probability	....	....	....	....	3	2
10.321	Psychology	....	....	1	2	....	....
10.325	Industrial Relations	2	3	2	3	....	....
10.332	Estate Management	2	1	....	....	....	....
10.333	Industrial Processes	1	2	1	2	....	....
10.345	Managerial Economics	....	....	....	....	2	2
10.360	Business Law	2	1	2	1	....	....
14.052	Data Processing Applications	2	3	2	3	....	....
16.361	Finance	2	2	2	2	....	....
20.381	Human Relations	2	1	2	1	2	1
20.382	Marketing Research	....	....	....	....	2	1
22.037	Work Study I	1	2	1	2	1	2
22.038	Communication Systems	1	1	....	....	....	....
22.332	Applied Programming	....	....	....	....	2	4
31.302	Business Communications	....	....	....	....	....	1
	Library and Research	....	4	....	6	....	4
		15	20	13	22	14	21

Term 4

10.425	Industrial Relations	....	....	2	3	....	....
10.427	Manpower Selection and Placement	....	....	2	3	....	....
10.432	Estate Management	2	1	....	....	....	....
10.434	Managerial Policy	1	2	1	2	1	2
10.445	Managerial Economics	....	....	....	....	2	2
10.451	Forecasting	....	....	....	....	2	2
10.460	Business Law	2	1	2	1	....	....
10.465	Society and Government	....	....	....	....	2	2
14.409	Operations Research Techniques	....	....	....	....	3	4
16.443	Management Accounting	2	3	....	....	....	....
16.461	Finance	2	2	2	2	....	....
20.482	Marketing Research	....	....	....	....	1	3
20.483	Personnal Administration	2	3	2	3	....	....
20.484	Transportation and Materials Handling	2	1	....	....	....	....
22.047	Work Study II	1	3	1	3	1	3
31.402	Business Communication	....	....	....	....	....	1
	Library and Research	....	5	....	6	....	4
		14	21	12	23	12	23

* Economics and Statistics Option take Managerial Economics 10.245 instead of Office Systems and Procedures 14.296 in Term 2.

General Prerequisite: Graduation on the Academic-Technical Programme.


1
2
3

Business Management Division

Broadcast Communications Technology

The need for educational facilities in broadcast communications has long been recognized by the industry in Canada.

The broadcasters of this Province lend their whole-hearted support to this concept; moreover, an industry committee was deeply involved in the formulation of the Broadcast Communications programme.

With new radio and television stations coming on the air every year, with the expansion of present station activities, and the increasing activity in such areas as educational television, the demand for trained personnel continues. To give training with a strong emphasis on the practical aspects, a complete radio and television laboratory was established at the Institute. The Broadcast Communications programme is a realistic one, offering authentic on-the-job training and experience within the Institute, with students working in actual radio and television production for an entire school-year before they go into industry.

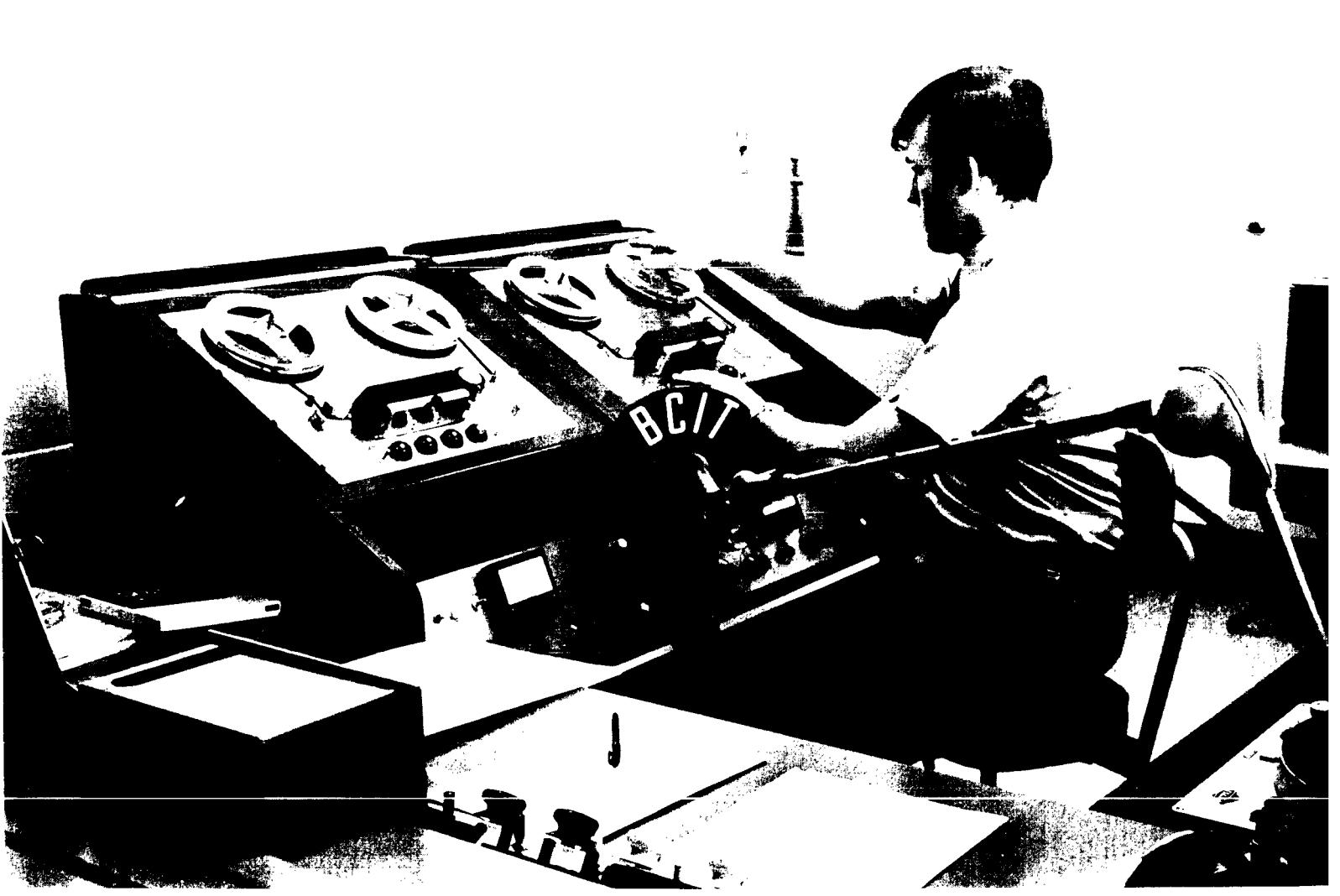
Students receive training in all non-electronic areas of broadcasting in both radio and television, taking a common first year, and then receiving specialized tuition in one of three electives in second year—Radio, Television, and News. In addition to instruction in announcing, writing, news operations, recording, and radio and television production, students are given a thorough knowledge of the use and operation of all broadcasting equipment.

To be successful, students in Broadcast Communications must possess a real interest for this demanding field. Although personality requirements vary somewhat, the out-going person is better suited to those positions in which meeting the public is of great importance. Shift work is common in the industry, since both radio and television stations operate most of the day and night.

A thorough knowledge of English is essential to the prospective student in this programme, as is a genuine interest in the world and its peoples. Previous study in the areas of history and current events is of value.

To graduates, the broadcasting industry offers interesting, challenging, and rewarding work with ample opportunities for advancement.

Those prospective students whose interest lies in the electronic areas of the broadcasting industry, such as the maintenance and repair of the equipment used in broadcasting, are directed to the Electrical and Electronics programme of the Institute, and to the Broadcast Systems elective in the Electronics Option of this programme.


BC/T

BUSINESS MANAGEMENT DIVISION

BROADCAST COMMUNICATIONS TECHNOLOGY

YEAR 1 — *Term 1*

No.	Subject	Hours per Week Lec.	Lab.
10.730	Business	2	1
12.101	Introduction to Radio	2	
12.102	Introduction to Television	2	7
12.103	Introduction to News	2	
12.104	Introduction to E.T.V.	2	
12.105	Industrial Organization	2	—
12.106	History and Current Events	1	1
20.190	Writing and Sales	1	2
22.012	Statistics for Broadcasting	2	1
31.103	Writing and Modern Literature	2	1
	Library and Research	—	4
		18	17

Term 2

10.260	Law for Broadcasting	2	—
12.201	Introduction to Radio	2	
12.202	Introduction to Television	2	7
12.203	Introduction to News	2	
12.204	Introduction to E.T.V.	2	
12.205	Industrial Organization	2	—
12.206	History and Current Events	1	1
20.290	Writing and Sales	1	2
22.022	Statistics in Broadcasting	2	1
31.203	Writing and Modern Literature	2	1
	Library and Research	—	5
		18	17

YEAR 2 — *Term 3*

12.306	History and Current Events	2	2
20.390	Writing and Sales	1	2
31.303	Writing and the Mass Media	2	1
	Elective*	4	16
	Library and Research	—	5
		9	26

* Students will select one of the following three electives:

12.311 Radio Production.
12.312 Television Production.
12.313 News—Radio and Television.

Term 4

12.406	History and Current Events	2	2
20.490	Writing and Sales	1	2
31.403	Writing and the Mass Media	2	1
	Elective	4	16
	Library and Research	—	5
		9	26

12.411 Radio Production.
12.412 Television Production.
12.413 News—Radio and Television.

N.B.—All students will serve a four-week industry practicum in Term 4.

General Prerequisite: Graduation on the Academic-Technical Programme.
Special Prerequisites: History 12, English Literature 12.

Business Management Division

Computer Programming and Systems Technology

The development in the last few years of the electronic computer has resulted in what has been called a "second industrial revolution." Almost every field of human endeavour has been affected by this development, and computers are now used in such diversified areas as banking, libraries, business accounting, air-line ticket reservations, space flight, controlling railroads, predicting weather, calculating statistics for insurance companies, scientific research, and automatic control of factories, refineries, and power plants.

These applications of the electronic computer cannot be successfully established without an enormous amount of human planning and preparation. The computer is an extremely fast and reliable calculating device, but it must be given completely detailed instructions for every step in the calculation. This involves three main steps in the application of a computer to a problem. First, a complete analysis must be made of the problem, taking into account every conceivable situation that can arise. Next, an approach to the solution must be formulated showing the action to be taken in each different circumstance. Finally, the solution must be expressed in the form of a set of instructions to the computer.

The Computer Programming and Systems Technology is designed to train students to meet the demand for programmers and systems analysts. In the first year, basic business subjects such as accounting, economics, office equipment, etc., are studied, as well as the introductory courses in programming and systems. In the second year, students have the choice of concentrating either on business data-processing systems or on the application of mathematical techniques to managerial, engineering, or medical problems.

Also in the second year, students in either option may take an elective course in Systems Programming. This course gives training in the design and maintenance of the highly specialized programmes used to control the efficient operation of a modern computer system.

Students wishing to enter this programme should have an analytical mind with a strong aptitude for logical reasoning, as well as a capacity for painstaking attention to detail.

Those interested in the Computing Science Option in the second year must also have an outstanding ability in mathematics and a keen interest in the physical sciences.

BUSINESS MANAGEMENT DIVISION

COMPUTER PROGRAMMING AND SYSTEMS TECHNOLOGY

YEAR 1 — *Term 1*

No.	Subject	Hours per Week Lec.	Lab.
10.135	Economics	2	2
14.160	Introduction to Computer Programming	2	2
14.170	Unit Record Data Processing	1	1
14.182	Office Equipment	1	2
16.140	Accounting	2	3
20.090	Marketing	2	2
22.111	Mathematics	2	3
31.102	Communicating in a Business Context	2	2
	Common Tutorial	....	1
	Library and Research	....	3
		14	21

Term 2

10.232	Administrative Practices	1	2
14.260	Principles of Computer Programming	2	4
14.270	Computer Systems I	3	2
14.296	Office Systems and Procedures	1	2
16.240	Accounting	2	3
22.221	Statistics in Business and Industry	1	2
31.202	Communicating in a Business Context	2	2
	Common Tutorial	....	1
	Library and Research	....	4
		12	22

YEAR 2 — *Term 3*

No.	Subject	Business Systems Hours per Week Lec.	Lab.	Computing Science Hours per Week Lec.	Lab.
14.305	Calculus with Business and Technical Applications	....	....	2	2
14.306	Probability and Simulation	....	....	2	4
14.360	IBM S/360 Assembler Programming	3	5	3	5
14.370	Computer Systems II	3	5	3	5
16.341	Cost and Managerial Accounting	2	3	....	....
20.381	Human Relations	2	1	2	1
22.037	Work Study I	1	2	....	....
22.331	Quantitative Methods for Management	1	2	....	....
43.343	Digital Techniques	....	....	1	1
	Library and Research	....	5	....	4
		12	23	13	22

Term 4

10.434	Managerial Policy	1	2	....	....
14.407	Engineering Application Programmes	....	....	1	1
	Medical Applications	....	....	1	1
14.409	Operations Research Techniques	....	....	3	4
14.460	Advanced Programming (Assembler and PL/I)	3	5	3	5
14.470	Computer Systems III	3	6	3	6
16.441	Cost and Managerial Accounting	2	3	....	....
22.047	Work Study II	1	3	....	....
31.402	Business Communications	1	1	1	1
	Library and Research	....	5	....	5
		11	25	12	23

		Lec.	Lab.
14.480	Operating Systems Programming (Elective)	3	3

This subject may be taken instead of Work Study or Engineering Applications Programmes and Medical Applications.

General Prerequisite: Graduation on the Academic-Technical Programme.

Special Prerequisite for Computer Science: Mathematics 12.

Annual Report 1966

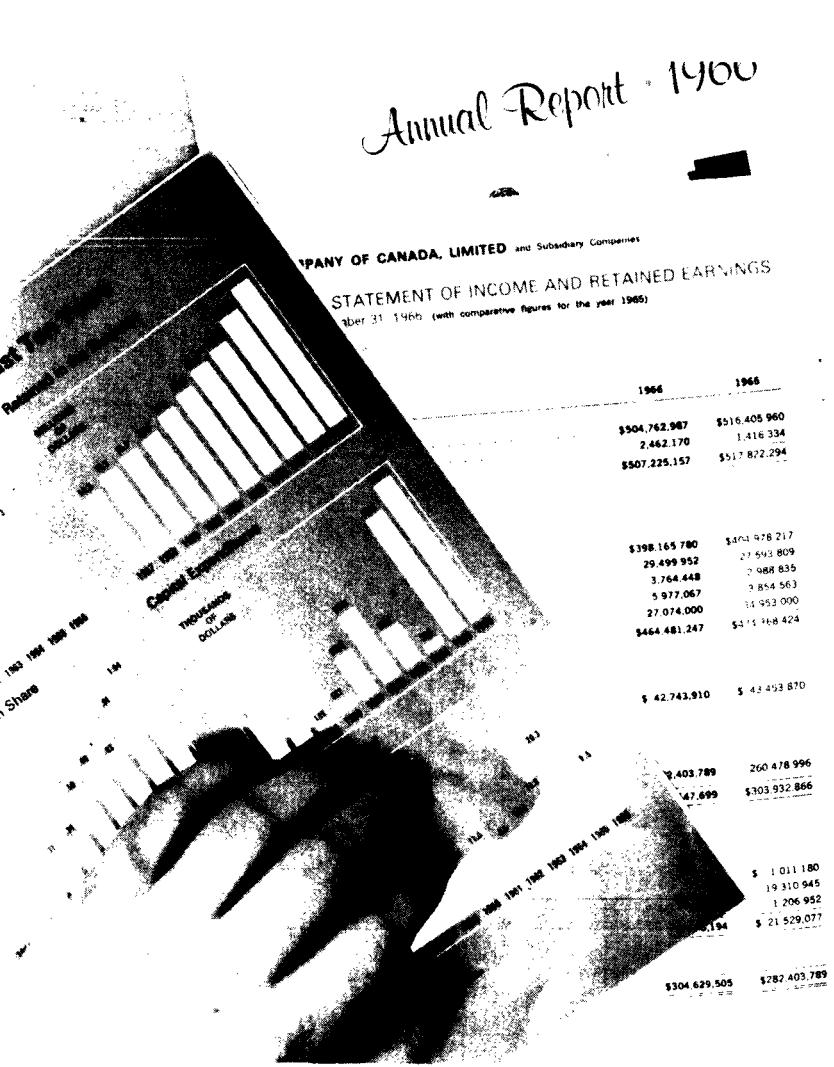
[redacted]

'PANY OF CANADA, LIMITED and Subsidiary Companies

STATEMENT OF INCOME AND RETAINED EARNINGS

ber 31, 1966 (with comparative figures for the year 1965)

	1966	1965
	$504,762,987	$516,405,960
	2,462,170	1,416,334
	$507,225,157	$517,822,294
	$398,165,780	$404,978,217
	29,499,952	27,693,809
	3,764,448	2,988,835
	5,977,067	3,854,563
	27,074,000	34,953,000
	$464,481,247	$474,468,424
	$ 42,743,910	$ 43,453,870
	2,403,789	260,478,996
	47,699	$303,932,866
		$ 1,011,180
		19,310,945
		1,206,952
		$ 21,529,077
	$304,629,505	$282,403,789



CONSOLIDATED BALANCE SHEET December 31, 1966

(with comparative figures at December 31, 1965)

	1966	1965
ASSETS		
CURRENT ASSETS		
Cash	$ 9,601,319	$ 7,576,205
Marketable securities, at cost (approximates quoted market value)	25,968,006	37,939,107
Accounts receivable	69,341,211	74,766,499
Inventories at the lower of cost or market (Note 6)	114,176,797	121,112,044
Prepaid expenses	1,458,674	1,075,151
	$220,546,007	$242,469,006
SPECIAL REFUNDABLE TAX	$ 3,327,524	—
INVESTMENTS IN ASSOCIATED COMPANIES at cost (Note 7)	$ 20,002,709	$ 19,011,896
FIXED ASSETS		
Plants and properties at cost	$846,692,975	$750,803,179
Less Accumulated depreciation	382,380,139	354,512,432
	$464,312,836	$396,290,747
TOTAL ASSETS	$708,189,076	$657,771,649
LIABILITIES		
CURRENT LIABILITIES		
Accounts payable and accrued		$ 58,135,938
Provision for income and other taxes		3,404,012
Dividend and extra distribution payable		6,034,762
Current portion of long term debt		14,411,000
		$ 81,985,0[illegible]
LONG TERM DEBT (Note 2)		59,726
PROVISION FOR DEFERRED INCOME TAXES		133,7[illegible]
TOTAL LIABILITIES		$275,4[illegible]
SHAREHOLDERS' EQUITY		
COMMON SHARES — no par value (Note 9)		$128,098,886
Authorized — 28,000,000 shares		304,629,505
Issued — 24,139,052 shares		
RETAINED EARNINGS — in use in the business		
TOTAL SHAREHOLDERS' EQUITY	$432,728,391	
TOTAL LIABILITIES AND SHAREHOLDERS' EQUITY	$708,189,076	$65[illegible]

Approved on behalf of the Board: K. W. SCULLY, Director H. M. GRIFFITH, Director

Business Management Division

Financial Management Technology

Financial management is a vital aspect of business life and continues to grow in importance as modern management techniques are developed and applied. The Financial Management Technology will enable students to train in this field by taking a general course of studies in their first year followed by specialized training in either Accounting or Finance.

Accounting Option

Accounting, which has frequently been called the "language of business," can be broken down into three parts—accounting systems, financial reporting, and auditing. The Accounting Option is concerned with all three aspects of accounting. They are introduced in the first-year courses in accounting, data processing, and systems. More specialization is provided in financial and cost accounting in the second year.

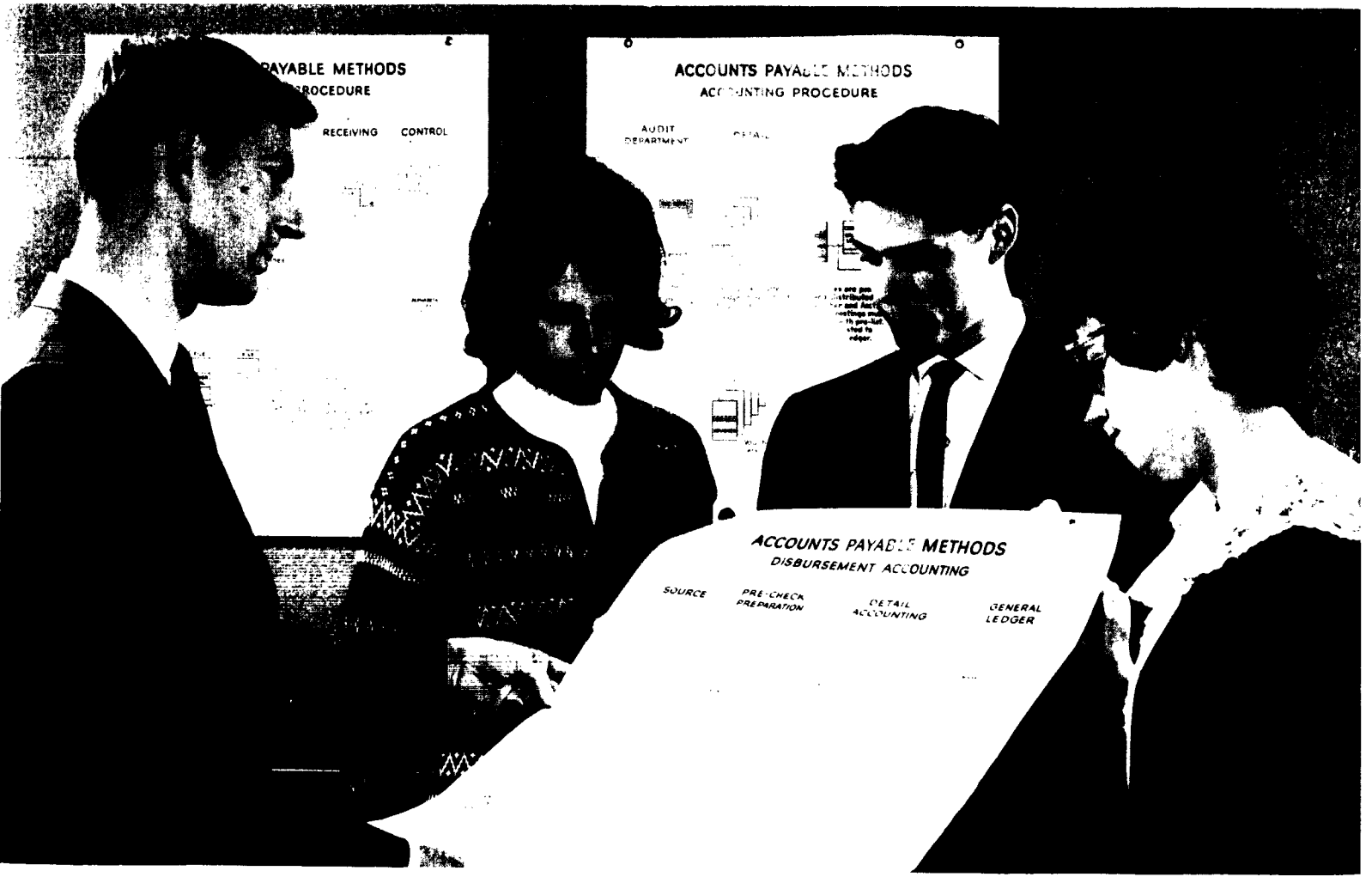
Large organizations maintain departments to perform the accounting functions of financial accounting, cost accounting, internal audit, and budget preparation. Many jobs are open in these departments at the middle management level. That the graduate can enter accounting positions upon leaving the British Columbia Institute of Technology does not mean that his training should be considered at an end. The faculty of the option maintain active and close liaison with the professional accounting associations in British Columbia, and the graduate who wants to undertake the training they offer is in an advantageous position as a result of the courses he has taken at the Institute.

Finance Option

Finance is an essential part of business management. No undertaking can begin or continue unless it has financing. Finance is the concern of business firms as they seek funds for existing and new operations. Finance is the concern of financial institutions, as they provide funds for the business firms. Background for the study of finance is provided in the financial accounting courses. Decision-making in the finance field is dealt with in depth in the specialized second-year courses.

Many job opportunities exist for graduates in this option. Financial institutions such as banks, trust companies, insurance companies, and finance companies offer a wide range of occupations. These institutions are increasingly aware of the need for post-high-school training. Business firms also offer opportunities in their finance departments for option graduates. After appropriate job experience, opportunity for advancement to the intermediate level of branch manager and beyond would exist.

A student wishing to enter either the Accounting Option or the Finance Option should have an inquiring mind and enjoy working with people. A capacity to reason clearly and to work hard is also required. A student who comes with these qualities and a determination to succeed will be assured of employment in a field of absorbing interest and continuing challenge.


RECEIVING
CONTROL
ACCOUNTS PAYABLE METHODS
ACCOUNTING PROCEDURE
AUDIT DEPARTMENT
ACCOUNTS PAYABLE METHODS
DISBURSEMENT ACCOUNTING
SOURCE
PRE-CHECK PREPARATION
DETAIL ACCOUNTING
GENERAL LEDGER

BUSINESS MANAGEMENT DIVISION

FINANCIAL MANAGEMENT TECHNOLOGY

YEAR 1 — *Term 1*

No.	Subject	Hours per Week Lec.	Lab.
10.131	Management in Industry	1	2
10.135	Economics	2	2
14.050	Introduction to Data Processing	2	2
14.182	Office Equipment	1	2
16.140	Accounting	2	3
20.180	Marketing	2	1
22.013	Business Mathematics and Statistics I	2	3
31.102	Communicating in a Business Context	2	2
	Common Tutorial	—	1
	Library and Research	—	3
		14	21

Term 2

10.232	Administrative Practices	1	2
10.235	Economics	2	2
14.296	Office Systems and Procedures	1	2
16.240	Accounting	2	3
16.245	Credit and Collections	2	1
20.280	Marketing	2	1
22.023	Business Mathematics and Statistics II	2	3
31.202	Communicating in a Business Context	2	2
	Common Tutorial	—	1
	Library and Research	—	4
		14	21

YEAR 2 — *Term 3*

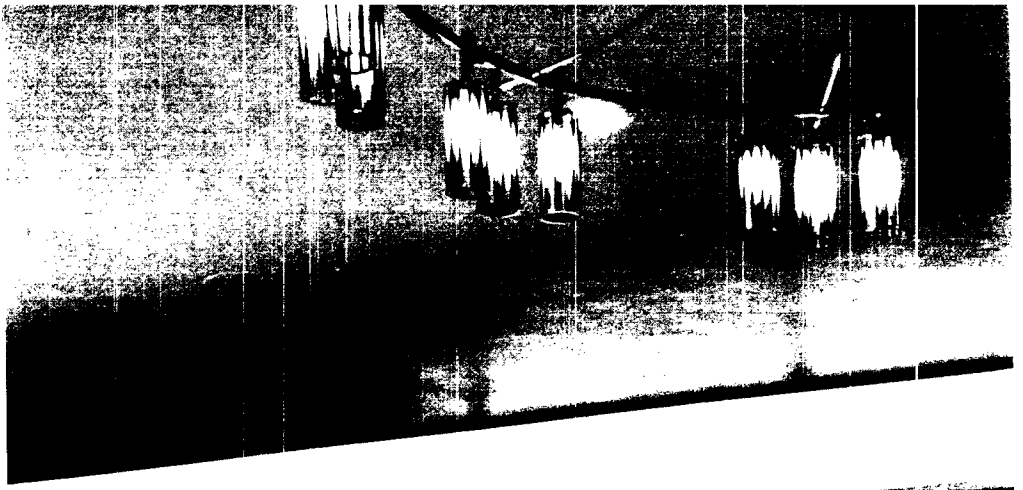
No.	Subject	Accounting Option Hours per Week Lec.	Lab.	Finance Option Hours per Week Lec.	Lab.
10.332	Estate Management*	—	—	2	1
10.360	Business Law	2	1	2	1
14.052	Data Processing Applications	2	3	—	—
16.341	Cost and Managerial Accounting	2	3	—	—
16.346	Auditing	2	2	—	—
16.347	Financial Accounting	3	3	3	3
16.361	Finance	2	2	2	3
16.365	Money and Banking	—	—	2	2
16.366	Security Analysis	—	—	2	3
20.381	Human Relations	2	1	2	1
	Library and Research	—	5	—	6
		15	20	15	20

Term 4

10.432	Estate Management*	—	—	2	1
10.434	Managerial Policy	1	2	1	2
10.460	Business Law	2	1	2	1
14.053	Business Computer Programming	2	2	—	—
16.441	Cost and Managerial Accounting	2	3	—	—
16.446	Auditing	2	2	—	—
16.447	Financial Accounting	3	3	3	3
16.461	Finance	2	2	2	3
16.465	Money and Banking	—	—	2	2
16.466	Security Analysis	—	—	2	3
	Library and Research	—	6	—	6
		14	21	14	21

* Elective 16.368, 16.468 Insurance.

General Prerequisite: Graduation on the Academic-Technical Programme.



Business Management Division

Hotel, Motel, and Food Service Management Technology

The " hospitality " industry is in a state of rapid expansion. Receipts from tourists to Canada have more than doubled in the last five years. This rate of growth is expected to continue. Every tourist establishment must be staffed by trained managers and employees to serve the tourist trade and travelling public. At present the demand for qualified administrative personnel exceeds the supply, a situation likely to become even more serious in the next few years. The need is for well-trained managers with the ability to look ahead and plan, with the flexibility of mind to adapt to rapidly changing conditions. This is the challenge!

In the two-year programme, students obtain intensive theoretical and practical training not only in general business procedures, but also in every aspect of hotel or restaurant operations: front office and housekeeping; general and departmental controls and accounting; purchasing, receiving, and storing of hotel supplies; preparation and serving of food and beverages; maintenance and engineering; planning and design; advertising and promotion; and human relations. The hotel and restaurant laboratory area at the Institute is outfitted with fully furnished typical hotel and motel rooms, a lobby and lounge, and a front desk equipped with the latest automatic billing and audit machine. Students will train in the school's cafeteria and dining-room, and food production and research laboratory, learning the fundamentals of food operations from the purchase of food through its preparation to the serving of a top-quality meal.

With this training, supplemented by three months of added practical experience in a hotel, motel, or restaurant between the first and second years, graduates should find ample employment opportunities. Although it is unlikely that a graduate will step immediately into a top position, after some experience at the front desk, in the general office, or in the catering department he should, within a few years, assume such positions as front office manager, catering manager, or assistant manager of a smaller hotel. Female graduates could expect to assume executive housekeeping or food management positions. Eventual promotion to full managership is up to the individual. Many opportunities lie in the fields of industrial and air-line catering, and in other businesses associated with the problems of mass feeding and housing, such as hospitals and universities.

Graduates should be prepared to work irregular hours if necessary and be able to associate harmoniously with fellow employees and the public in general. The personal touch is imperative; in the service industries, machines can lighten the load, but they cannot replace a personality.

BUSINESS MANAGEMENT DIVISION

HOTEL, MOTEL, AND FOOD SERVICE MANAGEMENT TECHNOLOGY

YEAR 1 — *Term 1*

No.	Subject	Hours per Week Lec.	Lab.
10.135	Economics	1	2
16.140	Accounting	2	3
16.145	Credit and Collection	2	2
18.101	Front Office Management	2	2
18.102	Food and Beverage Management	3	2
22.013	Business Mathematics and Statistics I	2	3
31.102	Communicating in a Business Context	2	2
	Tutorial		1
	Library and Research		4
		14	21

Term 2

10.235	Economics	1	2
14.050	Introduction to Data Processing	1	2
16.240	Accounting	2	3
18.202	Food and Beverage Management	3	2
18.203	Bar and Rooms Management	2	1
18.211	English Speech		2
22.023	Business Mathematics and Statistics II	2	3
31.202	Communicating in a Business Context	2	2
	Tutorial		1
	Library and Research		4
		13	22

YEAR 2 — *Term 3*

		HOTEL, MOTEL OPTION Hours per Week		FOOD MGMT. OPTION Hours per Week	
No.	Subject	Lec.	Lab.	Lec.	Lab.
10.317	Hospitality Industry Law	2			
18.302	Food and Beverage Management	3	6	3	6
18.305	Food Research and Production				6
18.313	Food and Beverage Control	2	2	2	2
18.316	Human Relations	1	1	1	1
18.318	Front Office Accounting		2		
18.321	Food Marketing			1	2
20.391	Advertising and Promotion	1	2		
22.036	Introduction to Work Study	1	2	1	2
40.314	Planning and Design	1	2		
44.332	Food Handling and Sanitation			2	1
49.370	Engineering and Maintenance	2			
	Library and Research		5		5
		13	22	10	25

Term 4

10.417	Hospitality Industry Law	2		2	
18.402	Food and Beverage Management	3	6	3	6
18.405	Food Research and Production				6
18.413	Hotel Accounting	2	2		
18.416	Human Relations	1	1	1	1
18.419	French Conversation		3		
18.420	Food and Beverage Accounting			1	1
18.422	Menu Planning			1	
18.424	Food Facilities Design			1	2
20.491	Advertising and Promotion	1	2		
31.402	Business Communication		2		2
40.414	Planning and Design	1	2		
44.432	Food Handling and Sanitation			2	1
49.470	Engineering and Maintenance	2			
	Library and Research		5		5
		12	23	11	24

General Prerequisite: Graduation on the Academic-Technical Programme.


PYJAMAS

Business Management Division

Marketing Management Technology

The stature of marketing within our society continues to grow.

The tremendous growth of our productive capacity, made possible by the accelerating rate of technological innovation, demands dynamic marketing practices, intense cultivation of markets, and intelligent, resourceful, trained marketing people to carry out the varied marketing functions.

These marketing people must be equipped with an understanding of the objectives, concepts, principles, methods, and problems of marketing. Thus they should have an aptitude and flair for responding to the challenges of a dynamic society where wants and needs are continually changing.

In order to meet this need, the Institute makes extensive use of the most modern methods of instruction, provides for guests from industry to lecture in their respective fields of specialization, and requires active participation of the student in business settings, through field trips, group projects, seminars, and case studies.

As a consequence of growth, both in enrolments and career opportunities, provision has been made for additional specialization within the marketing field. The objective of this change is to bring the student closer to the point where he can make an effective contribution to society in his career.

Three options are available in the Marketing programme following a common first term. All three of these options lead to careers in fields where the rewards for accomplishment are prompt and substantial.

Marketing Management Option

This option prepares students for careers in wholesaling, sales and sales management, advertising and sales promotion, product and market development, and marketing research.

Retail Management Option

The Retail Management Option is preparation for a career in retailing. The field of retailing covers a broad spectrum of activities and types of business involved in selling goods to ultimate consumers.

Traffic and Transportation Management Option

To achieve marketing objectives, enter new markets, and enjoy increased sales in highly competitive markets and to achieve significant marketing economies, a firm must employ sound marketing logistics. Students electing this option will specialize in storage, traffic, and transportation and will receive a sound training in distribution economics, materials handling, movement services, and storage facilities.


SALE
DAYS
SALE
DAYS

BUSINESS MANAGEMENT DIVISION

MARKETING MANAGEMENT TECHNOLOGY

YEAR 1 — *Term 1*

No.	Subject	Hrs. per Wk. Lec.	Lab.
10.131	Management in Industry	1	2
10.135	Economics	2	2
14.050	Introduction to Data Processing	2	2
14.182	Office Equipment	1	2
16.140	Accounting	2	3
20.180	Marketing	2	1
22.013	Business Mathematics and Statistics I	2	3
31.102	Communicating in a Business Context	2	2
	Library and Research		4
		14	21

Term 2

No.	Subject	Retail Mgt. Option Hrs. per Wk. Lec.	Lab.	Market. Mgt. Option Hrs. per Wk. Lec.	Lab.	Traf. and Transp. Mgt. Option Hrs. per Wk. Lec.	Lab.
10.235	Economics	2	2	2	2	2	2
14.052	Data Processing Applications					2	3
14.296	Office Systems and Procedures	1	2	1	2		
16.240	Accounting	2	3	2	3	2	3
16.245	Credit and Collections	2	1	2	1		
20.230	Introduction to Physical Distribution					2	2
20.275	Salesmanship	2	1	2	1		
20.280	Marketing	2	1	2	1	2	1
22.023	Business Mathematics and Statistics II	2	3	2	3	2	3
31.202	Communicating in a Business Context	2	2	2	2	2	2
	Library and Research		3		3		5
		16	19	16	19	14	21

YEAR 2 — *Term 3*

10.325	Industrial Relations					2	3
10.360	Business Law	2	1	2	1	2	1
16.342	Retail Merchandise Accounting	2	2				
16.343	Cost Accounting					2	3
20.310	Retailing	2	3				
20.320	Wholesaling*			2	1		
20.321	Exports and Imports			2	2		
20.322	Market Planning			2	3		
20.331	Modes of Transportation					2	2
20.332	Transportation Economics					2	2
20.371	Advertising and Sales Promotion	2	3	2	3		
20.372	Consumer Behaviour	2	2	2	2		
20.381	Human Relations	2	1	2	1	2	1
20.382	Marketing Research—Theory	2	1	2	1		
22.037	Work Study I					1	2
22.038	Communication Systems					1	1
40.385	Consumer Product Design	2	2				
	Library and Research		4		5		6
		16	19	16	19	14	21

Term 4

10.434	Managerial Policy	1	2	1	2		
10.460	Business Law	2	1	2	1		
16.442	Retail Merchandise Accounting	2	2				
20.411	Merchandising	2	3				
20.423	Sales Management			2	1		
20.432	Transportation Economics					2	2
20.433	Customs and Documentation					2	2
20.434	Regulatory Systems in Canadian Transportation					2	2
20.435	Distribution Centres and Control					2	2
20.436	Transportation Trends					2	2
20.437	Marketing Research for Transportation					2	3
20.443	Management Accounting			2	3		
20.471	Advertising and Sales Promotion	2	3	2	3		
20.482	Marketing Research—Applied	1	3	1	3		
20.483	Personnel Administration	2	2	2	2		
20.484	Transportation and Materials Handling	2	1	2†	1		
22.047	Work Study II					1	3
	Library and Research		4		5		6
		14	21	14	21	13	22

* Alternate elective: 10:332 Estate Management.
† Alternate elective: 10.432 Estate Management.

General Prerequisite: Graduation on the Academic-Technical Programme.

Business Management Division

Technical Management Technology

Space flights are notable examples of technological advance and man's mastery of science. Air travel, while not as glamorous, also illustrates our mastery of the sciences, as does the automobile, and television. So do less-obvious examples such as modern high-rise buildings or the local supermarket, where half of today's products were not available 15 years ago.

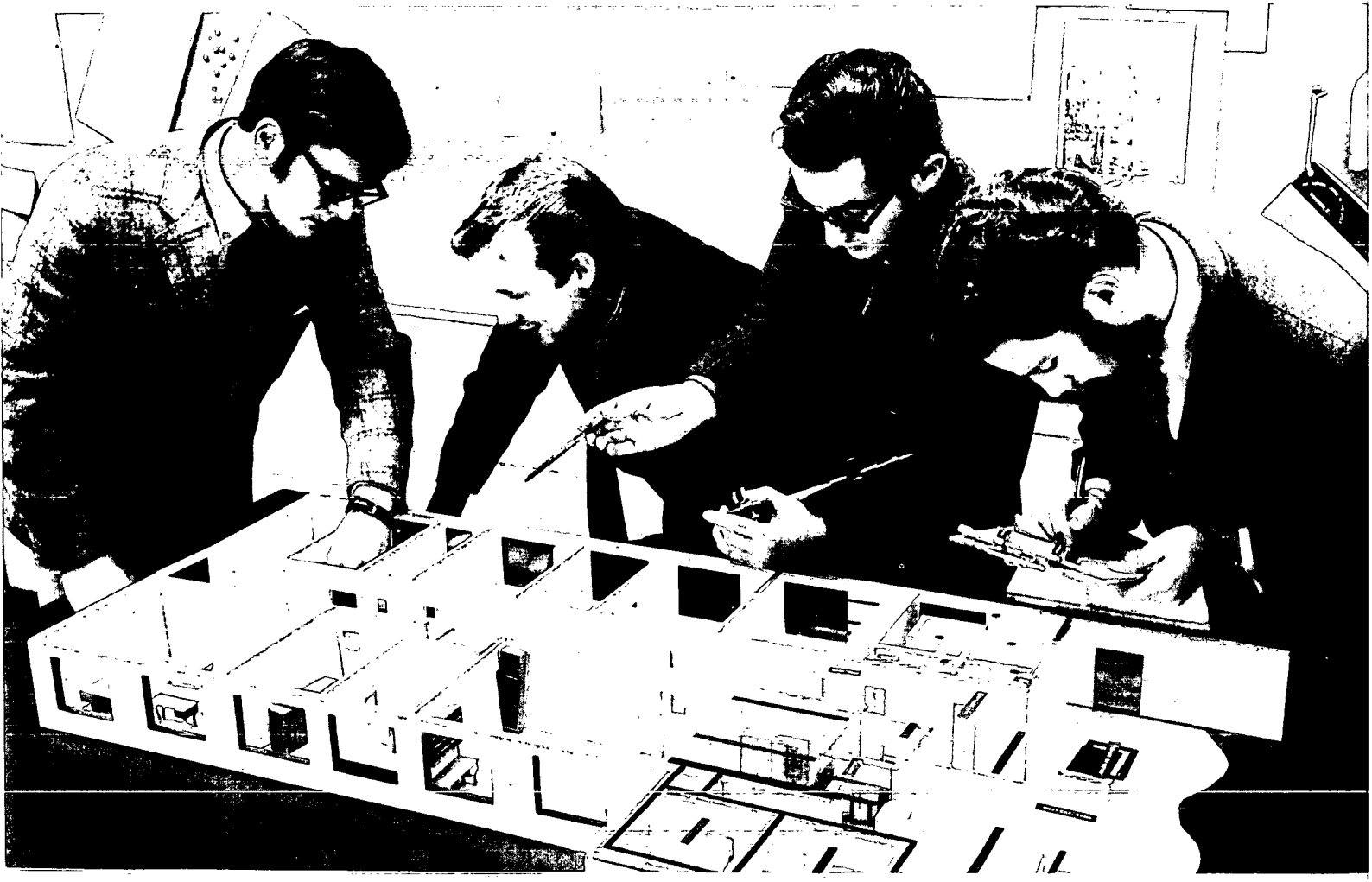
It is not enough to be able to use and understand the physical sciences. Knowing how to build a jet engine or wide oval tires or even an electric knife-sharpener does not mean that we can produce usable quantities. To produce sufficient numbers at a realistic cost requires considerable human effort in many varied jobs, and the nature of these jobs is changing rapidly. Just as new products are developed, new techniques and machines are being developed to produce these products. We use these tools, such as computers, to assist us, but they don't solve problems simply by pushing buttons, anymore than an automatic dishwasher does all the kitchen chores by pushing its buttons.

The essential ingredient is man, and man must be organized, he must have a planned approach to the job, or all the science and technology on the other side of the buttons is useless. The design, development, and directing of these systems of men and machines is the prime substance of Technical Management. This is where the most exciting and interesting challenges occur in modern business, and this is where the greatest potential for change and growth exists.

It is difficult to study in an inter-disciplinary environment. Relating business and engineering with human behavioural considerations is challenging, but it is also most rewarding. Each graduate has the potential to work in many areas of business, and is usually required to, because of his education. This means that he is not tied to routine tasks but is involved in many areas, consequently gaining a wide range of experience and knowledge of his employer's business in a relatively short time.

The student who enrols in this programme generally has some business experience and has recognized his need for more education. He usually has interests in technology, as demonstrated by taking science electives in high school and having taken mathematics to the Grade XII level. In addition, he must have considerable empathy for and be capable of relating to, people in a work situation.

For the person who enjoys challenges, this programme leads to work in such areas as systems analysis, method study, plant location and layout analysis, materials handling, and performance measurement and standards in many varied types of business. The wide experience available through working in these areas leads to early promotion to management, creating a continuing need for graduates. It is because of this potential that the Technical Management graduate can be called the technologist with a future.



BUSINESS MANAGEMENT DIVISION

TECHNICAL MANAGEMENT TECHNOLOGY

YEAR 1 *Term 1*

No.	Subject	Hours per Week Lec.	Lab.
14.050	Introduction to Data Processing	2	2
16.140	Accounting	2	3
22.110	Problems Laboratory	1	3*
22.111	Mathematics	2	3
31.101	Writing in a Technical Context	2	1
33.102	Introductory Physics	3	2
49.101	Draughting	–	2
49.106	Applied Mechanics A	2	3*
	Common Tutorial	–	1
	Library and Research	–	4
		14	21

Term 2

16.240	Accounting	2	3
22.220	Method Study	1	3
22.221	Statistics in Business and Industry	1	2
31.201	Writing in a Technical Context	2	1
33.202	Introductory Physics	3	2
49.206	Engineering Concepts	2	2
49.267	Introduction to Machine Tools	1	3
	Common Tutorial	–	1
	Library and Research	–	6
		12	23

YEAR 2 *Term 3*

10.135	Economics	2	2
16.343	Cost Accounting	2	3
22.330	Performance Measurement	2	3
22.331	Quantitative Methods for Management	1	2
22.332	Applied Programming	2	3
22.333	Systems and Procedures Analysis	2	1
30.381	Human Relations	2	1
	Library and Research	–	7
		13	22

Term 4

10.235	Economics	2	2
22.440	Industrial Engineering Concepts	3	5
22.441	Quantitative Methods for Management	1	2
22.442	Industrial Organization and Operation	4	4
22.443	Materials Handling and Control Equipment	1	1
20.483	Personnel Administration	2	1
	Library and Research	–	7
		13	22

* Three hours alternating each week.

General Prerequisite: Graduation on the Academic-Technical Programme.
Special Prerequisite: Mathematics 12.

Engineering Division

Biological Sciences Technology

The programme in Biological Sciences Technology provides instruction in the applied aspects of living phenomena. It includes the production and processing of our vital food supply from plant and animal sources. It includes also the ornamental plants that improve our landscapes. Thus, the technology is divided into three options: Food Processing, Food Production, and Landscape Horticulture.

Food Processing Option

The Food Processing Option provides a thorough knowledge of the basic sciences which leads to more advanced technical subjects related to the effective preservation of food. The student learns to apply knowledge of specialties such as microbiology, food chemistry, and food technology to processes such as canning, freezing, dehydrating, and fermenting.

The graduate in the Food Processing Option is well qualified for employment in the food manufacturing industry; for example, trained technologists are required to perform chemical, physical, and bacteriological tests on food materials during processing, and on the finished packaged goods. The graduate is qualified also to supervise processes within the food manufacturing plant itself. Further employment opportunities exist in government laboratories and inspection services.

Food Production Option

This option offers a thorough grounding in the sciences that are of importance in the production of food from agricultural sources. The student learns to apply knowledge of specialties such as botany, zoology, microbiology, genetics, entomology, and biochemistry to the production of food. In addition to studying plant, animal, and soil sciences, the student becomes acquainted with the analytical, mechanical, and business aspects of modern agricultural production.

The graduate in the Food Productior Option has many employment avenues open to him; for example, trained technologists are required for the laboratory control and marketing of agricultural chemicals, feeds, and fertilizers, and also in the field operations of food-manufacturing concerns. Additional job opportunities exist in inspection services and in government and industry research laboratories.

Landscape Horticulture Option

An option that deals with the ornamental plantings that are an important part of residential, commercial, industrial, and park developments. The option includes a basic study of the natural sciences that apply to the fields of floriculture, arboriculture, nursery production, turf management, and landscaping.

The graduate in the Landscape Horticulture Option is prepared for employment with landscape contractors, horticultural nurseries, and park systems.

ENGINEERING DIVISION

BIOLOGICAL SCIENCES TECHNOLOGY

No.	Subject	Hrs. per Wk. Lec.	Lab.
	YEAR 1 *Term 1*		
30.101	General Chemistry	3	3
31.101	Writing in a Technical Context	2	1
32.101	Basic Technical Mathematics	3	2
33.102	Introductory Physics	3	2
44.121	Introductory Microbiology	2	4
44.122	Biology	2	3
	Library and Research	–	5
		15	20

		FOOD PROCESSING OPTION Hrs. per Wk.		FOOD PRODUCTION OPTION Hrs. per Wk.		LANDSCAPE HORTICULTURE OPTION Hrs. per Wk.	
	YEAR 1 *Term 2*	Lec.	Lab.	Lec.	Lab.	Lec.	Lab.
30.201	General Chemistry	3	3	3	3	3	3
31.201	Writing in a Technical Context	2	1	2	1	2	1
32.246	Statistics I and II	3	2	3	2	3	2
33.202	Introductory Physics	3	2	3	2	3	2
44.201	Food Processing	3	3				
44.221	Microbiology for Food Processing	2	3				
44.223	Microbiology for Food Production			2	3		
44.251	Food Production			3	3		
44.253	Introductory Botany and Soils					3	3
44.263	Applied Horticulture					2	3
	Library and Research		5		5		5
		16	19	16	19	16	19
	YEAR 2 *Term 3*						
10.730	Business	2	1			2	1
30.303	Instrumental Analytical Methods	2	3	2	3		
31.301	Writing in a Technical Context	1	1	1	1	1	1
40.309	Landscape Draughting					1	2
44.301	Food Processing	2	3				
44.311	Quality Control	1	2				
44.312	Introductory Food Analysis	2	3	2	3		
44.352	Genetics			2	2		
44.361	Plant Technology			3	3	3	3
44.363	Applied Horticulture					3	3
44.364	Nursery Crop Production					3	3
44.371	Animal Technology			2	2		
48.350	Process Instrumentation	1	2				
49.314	Mechanics of Machines	2	2	2	2	2	2
	Library and Research		5		5		5
		13	22	14	21	15	20
	YEAR 2 *Term 4*						
20.700	Agricultural Products Marketing			2	1		
22.746	Introduction to Work Study	1	1				
31.401	Writing in a Technical Context	1	1	1	1	1	1
40.409	Landscape Draughting					1	2
44.401	Food Processing	2	3				
44.402	Process Analysis	2	3				
44.411	Quality Control	1	3				
44.412	Food Analysis	2	3				
44.413	Agricultural Analysis			2	3		
44.414	Experimental Techniques			2	2		
44.431	Sanitation	1	.3				
44.442	Agricultural Mechanics			2	3	2	3
44.462	Plant Protection			3	3	3	3
44.465	Landscape Field Practice					3	6
44.481	Soil Technology			2	3	2	3
48.450	Process Instrumentation	1	2				
	Library and Research		5		5		5
		11	24	14	21	12	23

General Prerequisite: Graduation on the Academic-Technical Programme
Special Prerequisites: Mathematics 12, Chemistry 11.

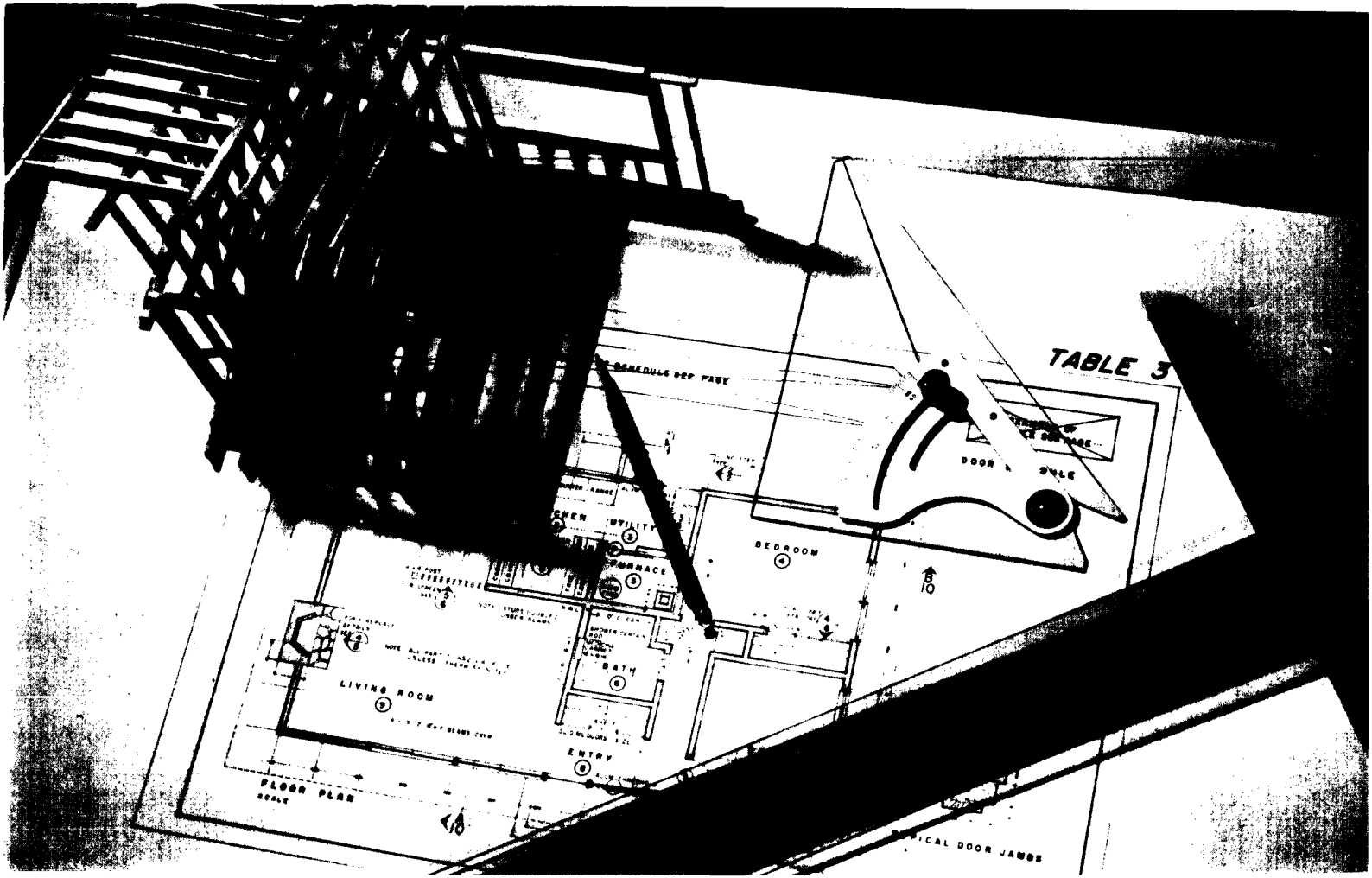


TABLE 3
SCHEDULE SEE PAGE
DOOR & STYLE
BEDROOM
FURNACE
BATH
LIVING ROOM
ENTRY
FLOOR PLAN
SCALE
TICAL DOOR JAMBS

Engineering Division

Building Technology

Throughout the world, rapidly expanding populations have enormously increased the demand for building operations of all kinds, and the course in Building Technology is designed to give as sound a preparation for this work as time allows.

In addition to continuing such basic high-school subjects as physics, mathematics, and English, which are essential in acquiring any degree of technical proficiency, the course introduces students in the first year to various specialized subjects as listed. All these subjects contain both lecture and draughting-room instruction, so students find they can further their education through their summer employment, being capable of working as draughtsmen in architects' and engineers' offices, as well as in the offices of various sub-trade and general contracting organizations.

In the second year, students continue with the specialized subjects referred to above, but in addition begin a thorough coverage of such subjects as materials of construction, specification writing, quantity and cost estimating, work study, and similar subjects which further expand the number of possible areas into which they may move successfully on graduation.

Fundamentally, graduate technologists will understand buildings three-dimensionally, with all their architectural, structural, and mechanical implications, and with this as a point of departure may enter any area of the building, or related, field to which their individual interests and qualifications lead them.

We envisage graduates, after a suitable period of practical experience, becoming chief draughtsmen in a variety of offices; specification writers; estimators with architectural, engineering, contracting, or other offices; building inspectors; officials in property management departments; appraisers and assessors in private and governmental offices; expediters, senior clerks, office managers in contractors' offices; superintendents of construction; partners in construction organizations, particularly sub-trades; agents for building supplies and equipment; technicians in private or governmental building laboratories; teachers and instructors in public schools and universities, to name the more obvious possibilities.

The environmental services option in second year enables students so inclined to specialize in building services in place of building structures.

In general, the course is creating a supply of highly qualified "assistant administrators" who will fill positions in the building world which lie between the professional architect, engineer, and contractor on the one hand and the vocationally trained draughtsman and tradesman on the other.

To students who wish to become registered architects by the apprenticeship system, the Royal Architectural Institute of Canada offers graduates credit for about half the examinations otherwise required.

Similarly, for those wishing to become quantity surveyors, the Canadian Institute of Quantity Surveyors will accept graduates as Probationer Members.

ENGINEERING DIVISION
BUILDING TECHNOLOGY

YEAR 1 — *Term 1*

No.	Subject	Hours per Week Lec.	Lab.
31.101	Writing in a Technical Context	2	1
32.101	Basic Technical Mathematics	3	2
33.104	Physics for Building Technology	3	—
40.101	Design and Draughting	1	4
40.102	Building Construction	4	4
40.103	Building Services	1	2
40.104	Building Regulations	1	—
42.107	Building Structures	2	2
	Library and Research	—	3
		17	18

Term 2

31.201	Writing in a Technical Context	2	1
32.226	Calculus I and Analytic Geometry	3	2
33.204	Physics for Building Technology	3	—
40.201	Design and Draughting	1	4
40.202	Building Construction	2	4
40.203	Building Services	1	2
42.207	Building Structures	2	2
51.204	Introduction to Survey for Building Students	1	2
	Library and Research	—	3
		15	20

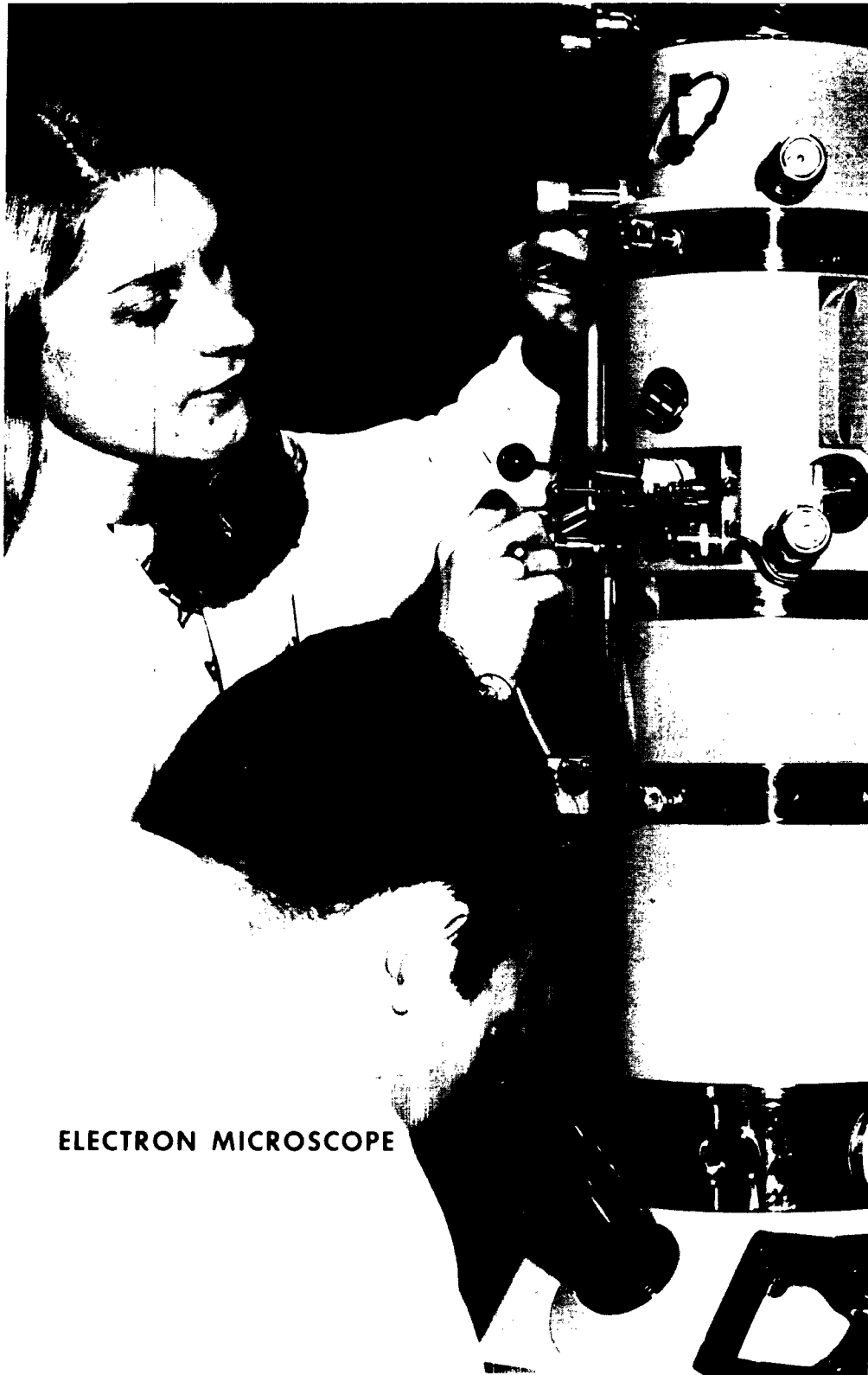
YEAR 2 — *Term 3*

No.	Subject	Hours per Week Lec.	Lab.	ENVIRONMENTAL SERVICES OPTION Hours per Week Lec.	Lab.
10.730	Business	2	1	2	1
40.301	Design	1	3	1	3
40.302	Building Construction	2	5	2	5
40.303	Building Services	2	2	2	2
40.305	Construction Specifications and Estimating	5	1	5	1
40.308	Environmental Services	—	—	1	3
42.307	Building Structures	1	3	—	—
	Tutorials	—	3	—	3
	Library and Research	—	4	—	4
		13	22	13	22

Term 4

22.746	Introduction to Work Study	1	1	1	1
40.401	Design	1	3	1	3
40.402	Building Construction	2	5	2	5
40.403	Building Services	3	2	3	2
40.405	Construction Specifications and Estimating	5	1	5	1
40.408	Environmental Services	—	—	1	3
42.407	Building Structures	1	3	—	—
	Tutorials	—	3	—	3
	Library and Research	—	4	—	4
		13	22	13	22

General Prerequisite: Graduation in the Academic-Technical Programme.
Special Prerequisites: Mathematics 12, Physics 11.



ELECTRON MICROSCOPE

Engineering Division

Chemical and Metallurgical Technology

The programme in Chemical and Metallurgical Technology provides instruction to those men and women wishing to enter the process industries—either in the laboratory, in the production department, in the engineering department, or in the technical sales department. As the technology encompasses a broad range of industries and sciences, the training emphasizes mathematics, physics, and chemistry, and their application to general problems recurring in the chemical process industries, rather than to specific problems peculiar to a single industry. Consequently, the first year is general, but a Unit Processes course and a workshop course are unique to this programme.

In the second year the curriculum provides considerable analytical laboratory practice together with such production and engineering training as work study, unit operations, and instrumentation. In addition, the student is given the choice of one of the following options: Industrial Chemistry, Physical Metallurgy, Extractive Metallurgy, or Pollution Treatment.

In this way a graduate will be equipped to enter the industry of his choice in either the sales, production, engineering, laboratory, or waste-disposal department.

Typical of the chemical process industries that will engage graduates from the programme are oil refineries, chlorine and caustic soda producers, beet and cane sugar refiners, cement producers, lime and gypsum producers, plastic and resin producers; copper, lead, zinc, and other metal smelters; aluminum, iron and steel, magnesium, and bronze smelters; metal fabricators and heat treaters; pulp and paper mills, and cellulose chemical producers; and mining companies engaged in both exploration and production. Typical of the positions graduates would seek upon entering industry would be as chemists and analysts in research, commercial, and industrial laboratories, as engineering assistants in engineering departments of industrial and consulting companies, as production supervisor trainees in production plants, as technical sales trainees in the sales departments of chemical process industries or equipment manufacturers, or as specialists in waste disposal and pollution treatment.

ENGINEERING DIVISION

CHEMICAL AND METALLURGICAL TECHNOLOGY

YEAR 1 — *Term 1*

No.	Subject	Hours per Week Lec.	Lab.
10.730	Business	2	1
30.101	General Chemistry	3	3
31.101	Writing in a Technical Context	2	1
32.101	Basic Technical Mathematics	3	2
33.101	General Physics (A1)	3	3
41.102	Laboratory Workshop	—	3
41.103	Engineering Materials	2	3*
49.101	Draughting	—	2
	Library and Research	—	4/1*
		15	20

Term 2

30.201	General Chemistry	3	3
30.304	Chemical Laboratory Techniques	—	3
31.201	Writing in a Technical Context	2	1
32.223	Calculus I and II	3	2
33.201	General Physics (A2)	3	3
41.203	Engineering Materials	2	3*
41.207	Unit Processes (Pollution Treatment Excepted)	1	2*
41.210	Environmental Sampling Techniques (Pollution Treatment)	—	2
49.201	Draughting	—	2
	Library and Research	—	4/5*
		14	21

* Alternate weeks.

INDUSTRIAL CHEMISTRY OPTION

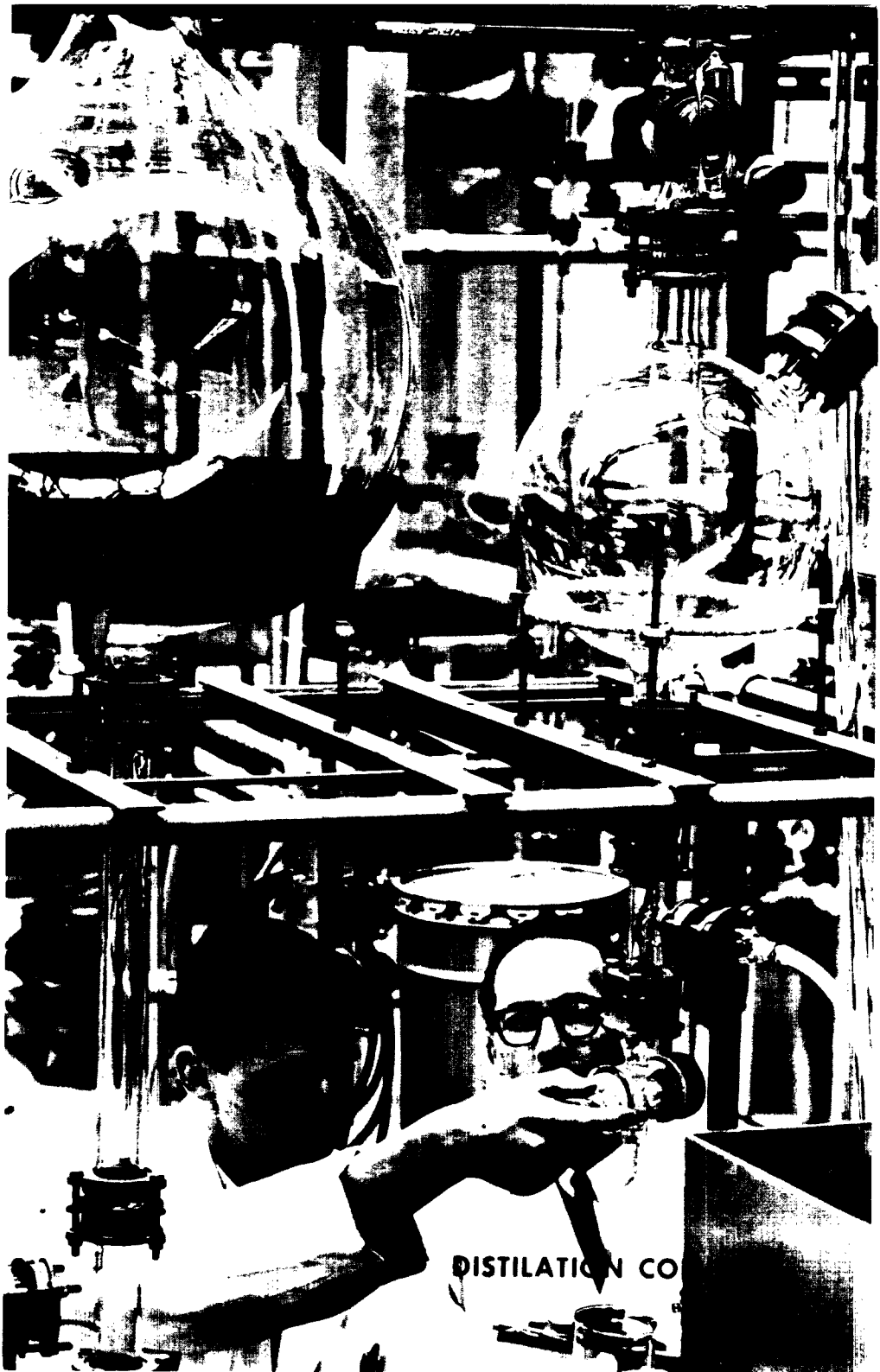
YEAR 2 — *Term 3*

No.	Subject	Hours per Week Lec.	Lab.
30.301	Organic Chemistry	2	4
30.302	Physical Chemistry	2	3
30.306	Analytical Chemistry	2	4
31.301	Writing in a Technical Context	1	1
32.305	Numerical Methods	3	2
41.341	Unit Operations	3	3
	Library and Research	—	2
		13	22

Term 4

22.746	Introduction to Work Study	2	—
30.401	Organic Chemistry	2	4
30.406	Analytical Chemistry	2	4
31.401	Writing in a Technical Context	1	1
32.464	Calculus III and Statistics I	3	2
41.441	Unit Operations	3	3
48.450	Process Instrumentation	—	3
	Library and Research	—	5
		13	22

General Prerequisite: Graduation on the Academic-Technical Programme.
Special Prerequisites: Mathematics 12, Chemistry 11, Physics 11.


DISTILATION CO

ENGINEERING DIVISION

PHYSICAL METALLURGY OPTION

YEAR 2 — *Term 3*

No.	Subject	Hrs. per Wk. Lec.	Lab.
30.302	Physical Chemistry	2	3
30.306	Analytical Chemistry	2	4
31.301	Writing in a Technical Context	1	1
32.305	Numerical Methods	3	2
41.304	Physical Metallurgy	2	4
41.341	Unit Operations	3	3
	Library and Research	....	5
		13	22

Term 4

22.746	Introduction to Work Study	2	....
30.406	Analytical Chemistry	2	4
31.401	Writing in a Technical Context	1	1
32.464	Calculus III and Statistics I	3	2
41.404	Physical Metallurgy	2	4
41.441	Unit Operations	3	3
48.450	Process Instrumentation	....	3
	Library and Research	....	5
		13	22

EXTRACTIVE METALLURGY OPTION

YEAR 2 — *Term 3*

No.	Subject	Hrs. per Wk. Lec.	Lab.
30.302	Physical Chemistry	2	3
30.306	Analytical Chemistry	2	4
31.301	Writing in a Technical Context	1	1
32.305	Numerical Methods	3	2
41.307	Extractive Metallurgy	3	3
41.341	Unit Operations	3	3
	Library and Research	....	5
		14	21

Term 4

30.406	Analytical Chemistry	2	4
31.401	Writing in a Technical Context	1	1
32.464	Calculus III and Statistics I	3	2
41.407	Extractive Metallurgy	3	3
41.408	Assaying	....	3
41.441	Unit Operations	3	3
48.450	Process Instrumentation	....	3
	Library and Research	....	4
		12	23

POLLUTION TREATMENT OPTION

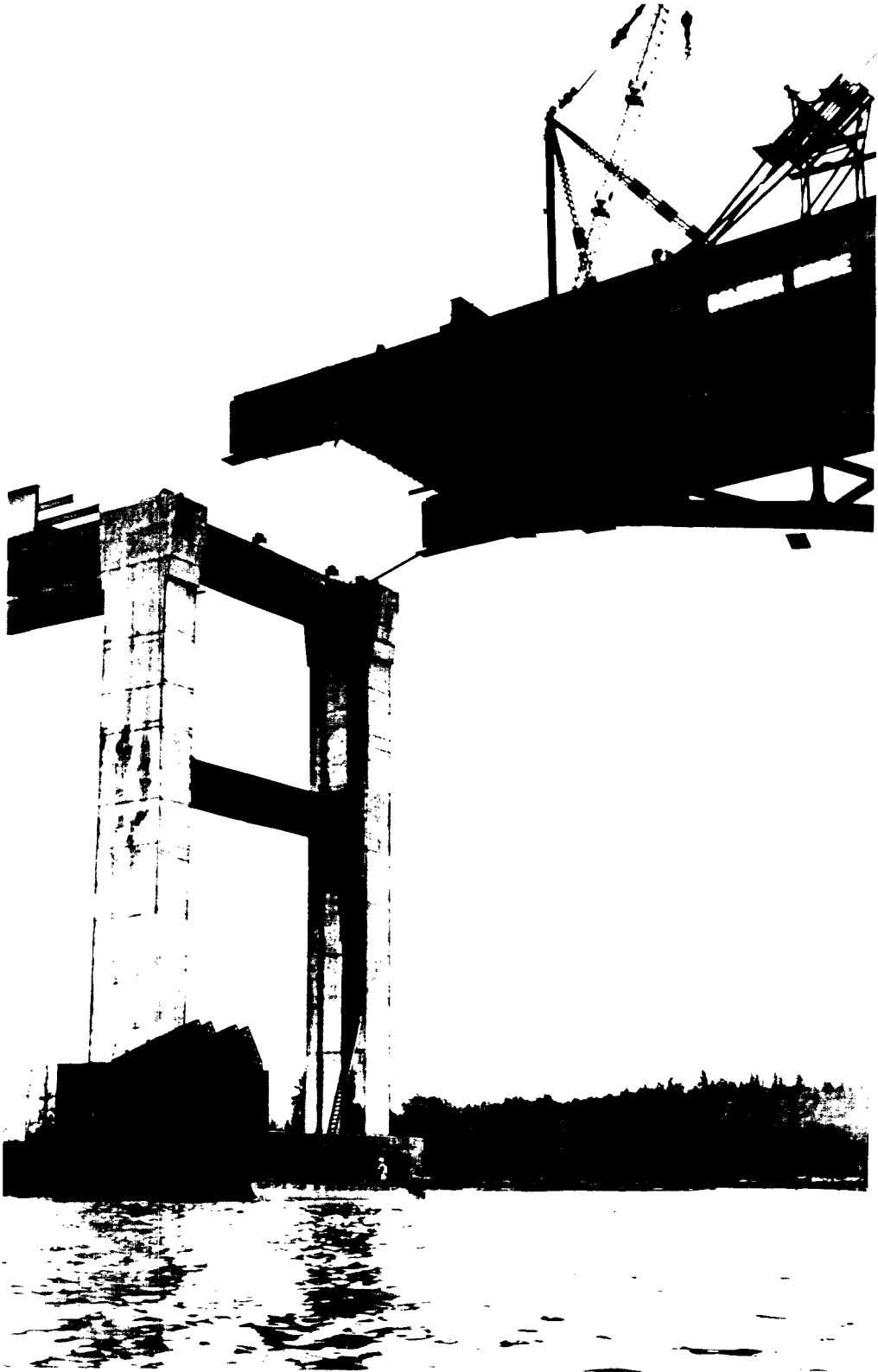
YEAR 2 — *Term 3*

No.	Subject	Hrs. per Wk. Lec.	Lab.
30.302	Physical Chemistry	2	3
30.306	Analytical Chemistry	3	3
31.301	Writing in a Technical Context	1	1
32.305	Numerical Methods	3	2
41.311	Pollution Science	2	4
41.341	Unit Operations	3	3
	Library and Research	....	5
		14	21

Term 4

30.406	Analytical Chemistry	3	3
31.401	Writing in a Technical Context	1	1
32.464	Calculus III and Statistics I	3	2
41.411	Pollution Science	2	4
41.412	Waste Disposal Methods	1	3
41.413	Environmental Analytical Methods	....	2
41.441	Unit Operations	3	3
	Library and Research	....	4
		13	22

General Prerequisite: Graduation on the Academic-Technical Programme.
Special Prerequisites: Mathematics 12, Chemistry 11, Physics 11.



Engineering Division

Civil and Structural Technology

Civil and Structural Technology, which creates the physical facilities for the civilized environment, is concerned with the design and construction of bridges, highways, railways, airports, dams, power developments, canals, docks, harbours, and buildings of all kinds, as well as drainage, irrigation, sewage, and water-supply systems.

In Canada, and particularly in British Columbia, with the economy developing rapidly, a great demand exists for trained technicians. Specifically designed to train civil and structural technicians, this programme will provide a man with sufficient specialized knowledge to make him immediately capable of playing a useful role in the economy. In addition, the programme prepares him to adapt to demands of the future.

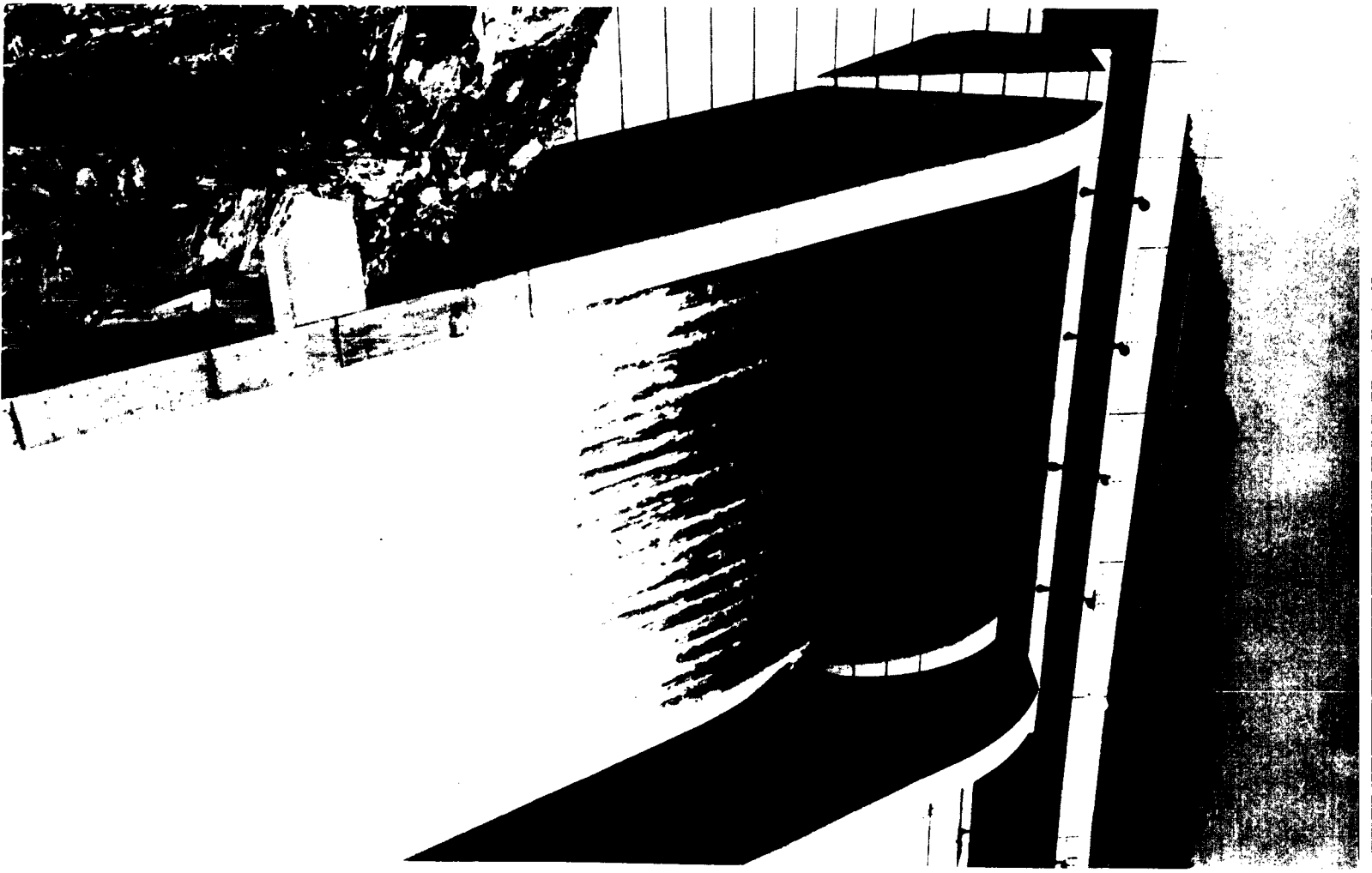
The programme provides a foundation in mathematics and the applied sciences for continued technical growth, and in English for the ability to set forth, in clear and precise language, descriptions and analyses of projects and engineering activities. The methods of instruction are planned to develop the initiative of the student while training him in habits of accurate analysis and careful work. In addition, frequent field trips will be made to appropriate projects to demonstrate at first hand the technology in operation. A student is encouraged to secure summer work which will give him an insight into various aspects of the career upon which he is about to enter.

A graduate may be employed as an inspector or supervisor in the contracting field, as an investigating or laboratory technician, or as a design or field technician in a consultant's office. He may be employed by municipal, provincial, or federal agencies, by consulting engineers, architects, and contractors, or in technical sales.

Candidates must have a sound knowledge of mathematics, physics, and English, and preferably some training in draughting. An interest in the practical application of scientific principles is essential.

This field frequently involves both indoor and outdoor assignments and requires keenness to take up the challenge offered by a fast-expanding industry demanding initiative and responsibility from its employees.

NOTE.—By September, 1970, a Water Resource Option *may* be offered. Interested students should inquire at registration time.



ENGINEERING DIVISION

CIVIL AND STRUCTURAL TECHNOLOGY

YEAR 1 — *Term 1*

No.	Subject	Hours per Week Lec.	Lab.
31.101	Writing in a Technical Context	2	1
32.101	Basic Technical Mathematics	3	2
33.107	General Physics (C1)	3	2
49.101	Draughting	—	2
51.102	Surveying	—	3
42.101	Civil Engineering and Tutorials	4	8
	Library and Research	—	5
		12	23

Term 2

31.201	Writing in a Technical Context	2	1
32.223	Calculus I and II	3	2
33.207	General Physics (C2)	3	2
49.201	Draughting	—	2
51.202	Surveying	—	3
42.201	Civil Engineering and Tutorials	4	8
	Library and Research	—	5
		12	23

YEAR 2 — *Term 3*

31.301	Writing in a Technical Context	1	1
32.306	Calculus III	2	2
51.309	Surveying	—	3
42.301	Civil Engineering and Tutorials	7	11
Electives		1	2
	22.037 Work Study (Civil and Traffic).		
	22.036 Work Study (Structural).		
Library and Research		—	5
		11	24

Term 4

31.401	Writing in a Technical Context	1	1
32.454	Numerical Methods and Statistics I	2	2
51.409	Surveying	—	3
Electives		6	15
	42.401 Civil Engineering (Civil) and Tutorials.		
	42.402 Civil Engineering (Traffic) and Tutorials.		
	42.403 Civil Engineering (Structural) and Tutorials.		
Library and Research		—	5
		9	26

General Prerequisite: Graduation on the Academic-Technical Programme.

Special Prerequisites: Mathematics 12, Physics 11.

BCIT

Engineering Division

Electrical and Electronics Technology

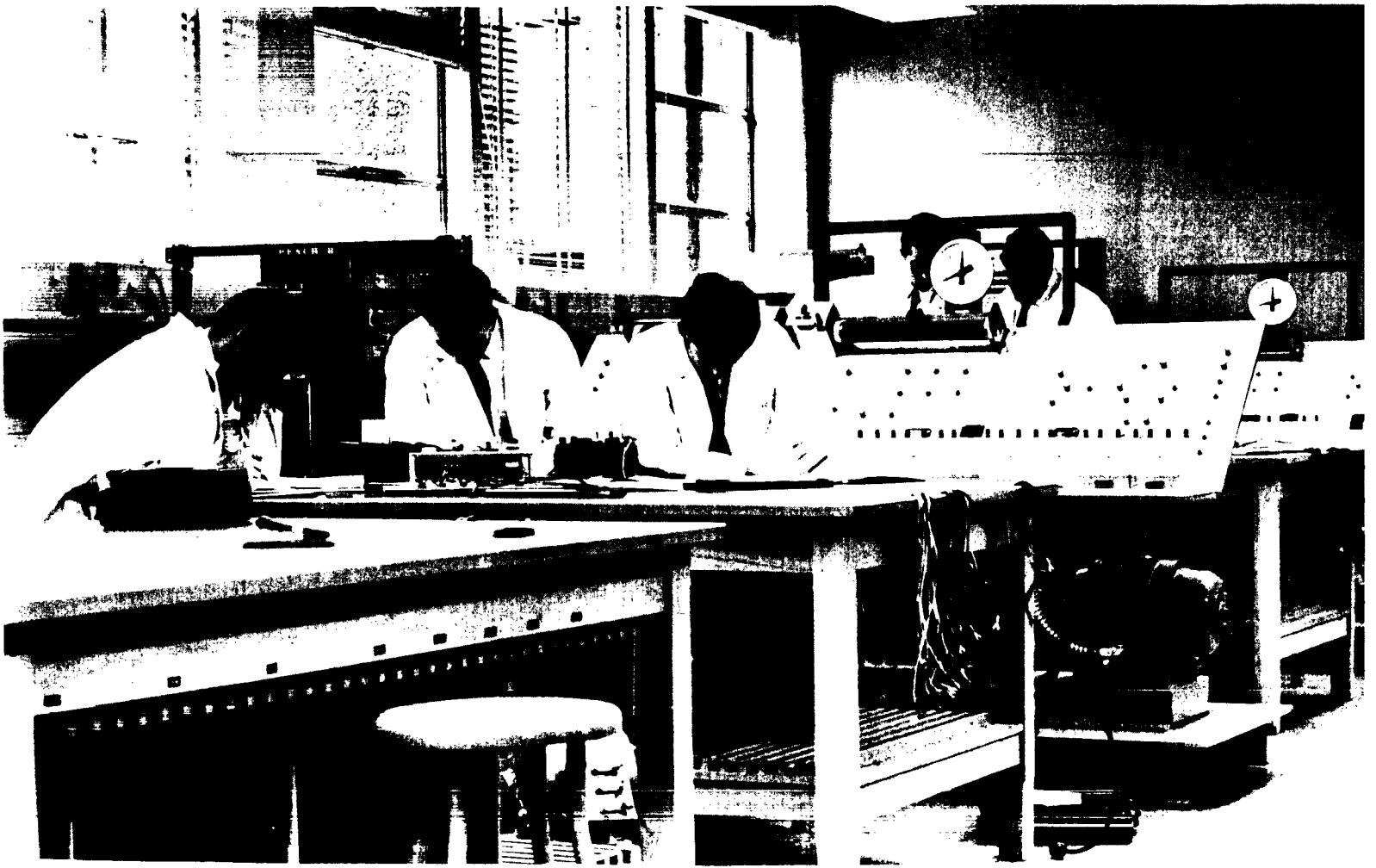
The electrical and electronics industry, vital to every aspect of Canadian life, continues to grow rapidly. It provides power needed by industry (the use of electrical energy in Canada doubles every 10 years), supplies facilities for the ever-increasing requirements of communications, and serves the needs of automation, transportation, defence, and our personal comforts. New products and methods are continually being developed to meet new demands. Consequently there is a continuing and increasing need for men and women well trained in the principles and practical application of electricity and electronics to apply their talents and assume positions of importance in an ever-expanding and interesting field.

The objective of the two-year Electrical and Electronics Technology programme is to provide sufficient training for the graduate to enter industry at the para-professional level as an engineering assistant or technologist. A broad training is given in fundamentals and industrial practices, qualifying the graduate to enter a variety of fields in an industry which provides many opportunities.

Two options are offered—Electronics and Electrical. Both options have a common first year (Terms 1 and 2), during which special emphasis is placed on electrical and electronic principles, with essential support subject-matter being provided by a series of service courses. In the second year (Terms 3 and 4) specialized training is given to the student in the option of his choice. Term 4 is applications oriented, for example, the Industrial System Design Course relates the previously learned principles to the industrial environment the student will encounter upon graduation. The students taking the Electronics Option have a further choice of four electives in their fourth term. These are described in the following pages.

Throughout the entire two-year period the student will spend approximately one-half of his time in the up-to-date laboratories, confirming the results of theoretical studies and carrying out personal investigations.

Graduates from the Electrical and Electronics Technology are employed in research and development, system design, production, sales, installation, and maintenance in commercial companies, government agencies, and educational institutions.



ENGINEERING DIVISION

ELECTRICAL AND ELECTRONICS TECHNOLOGY

YEAR 1 — *Term 1*

No.	Subject	Hours per Week Lec.	Lab.
31.101	Writing in a Technical Context	2	1
32.170	Basic Mathematics (Electrical)	5	4
33.106	General Physics (B1)	3	2
43.101	Circuit Devices and Techniques	—	2
43.102	Electrical Circuits	5	4
49.101	Draughting	—	2
	Library and Research	—	5
		15	20

Term 2

31.201	Writing in a Technical Context	2	1
32.270	Calculus (Electrical)	6	4
33.206	General Physics (B2)	3	2
41.208	*Properties of Materials*	—	2
43.202	Electrical Circuits	3	3
43.205	Electronic Circuits	2	2
49.201	Draughting	—	2
	Library and Research	—	3
		16	19

YEAR 2 — *Term 3*

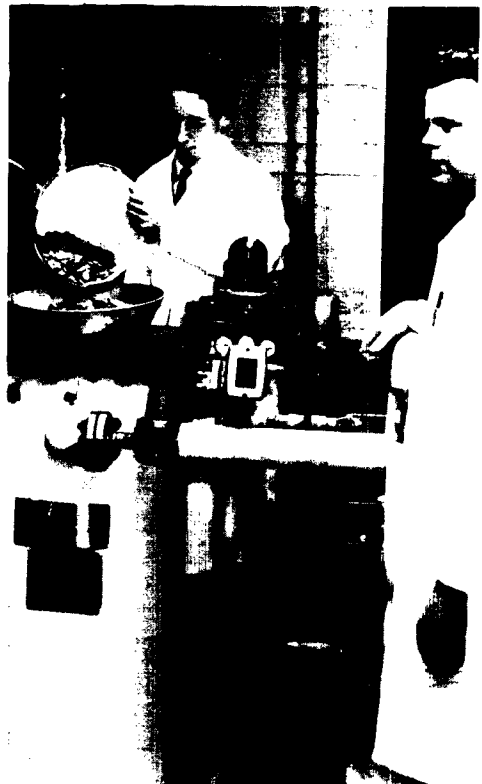
No.	Subject	POWER OPTION Hours per Week Lec.	Lab.	ELECTRONICS OPTION Hours per Week Lec.	Lab.
31.301	Writing in a Technical Context	1	1	1	1
32.370	Transform Calculus (Electrical)	3	2	3	2
43.303	Digital Techniques	3	2	3	2
43.311	Electrical Equipment	3	3	—	—
43.312	Electrical Circuits	3	3	—	—
43.314	Industrial Electronics	3	3	—	—
43.320	Measurements	—	—	2	2
43.325	Electronic Circuits	—	—	3	4
43.326	Communications	—	—	3	4
	Tutorial	—	2	—	2
	Library and Research	—	3	—	3
		16	19	15	20

Term 4

10.730	Business	1	1	1	1
43.411	Electrical Equipment	3	3	—	—
43.412	Circuit Analysis	2	2	—	—
43.414	Automatic Control Systems	3	3	—	—
43.418	Industrial System Design	3	3	—	—
43.419	Utility Systems	3	3	—	—
43.421	Electrical Systems	—	—	2	3
43.425	Pulse Circuits	—	—	2	3
43.427	Microwave	—	—	2	2
43.428	Electronics Elective*	—	—	4	4
43.429	Supervisory and Control Systems	—	—	3	3
	Library and Research	—	5	—	5
		15	20	14	21

* In 43.428, students take *one* of the following: (*a*) Telecommunications Systems; (*b*) Digital Computer Systems; (*c*) Circuit Design and Development; (*d*) Broadcasting Systems.

General Prerequisite: Graduation on the Academic-Technical Programme.
Special Prerequisites: Mathematics 12, Chemistry 11, Physics 11.



Forest Resource Technology

The forest lands of British Columbia constitute the most valuable natural resource, and their utilization provides the greatest single source of income to the Province, supporting almost one-half of our population. The tremendous expansion, both in the forest industry and in the Province's population, is creating demands for more integrated land, forest, and water resource management.

The function of the Forest Resource Technology is to provide technical training in the skills and techniques required for a career in resource management, forest harvesting, and forest utilization. With this purpose in mind, the technology has two separate programmes—the Forestry Programme, which contains a Forestry Option and a Fish, Game, and Parks Option; and the Forest Products Programme, which contains a Pulp and Paper Option and a Wood Option.

A candidate for this technology will enter one of the two programmes and can plan to graduate in one of the options offered. The candidate is required to work under conditions that require initiative, efficiency, and good leadership qualities. As a technologist he will be expected to work with a minimum of supervision and ultimately to accept some managerial responsibilities.

Prospective applicants should have completed Grade XII graduation on the Academic-Technical Programme, and industrial experience is also considered. Report writing and computational competence are very important in all options and candidates should make an effort to upgrade their qualifications in these subjects prior to enrolment. For the prerequisite courses required, please see the curriculum outline for each option on the following pages.

FORESTRY PROGRAMME

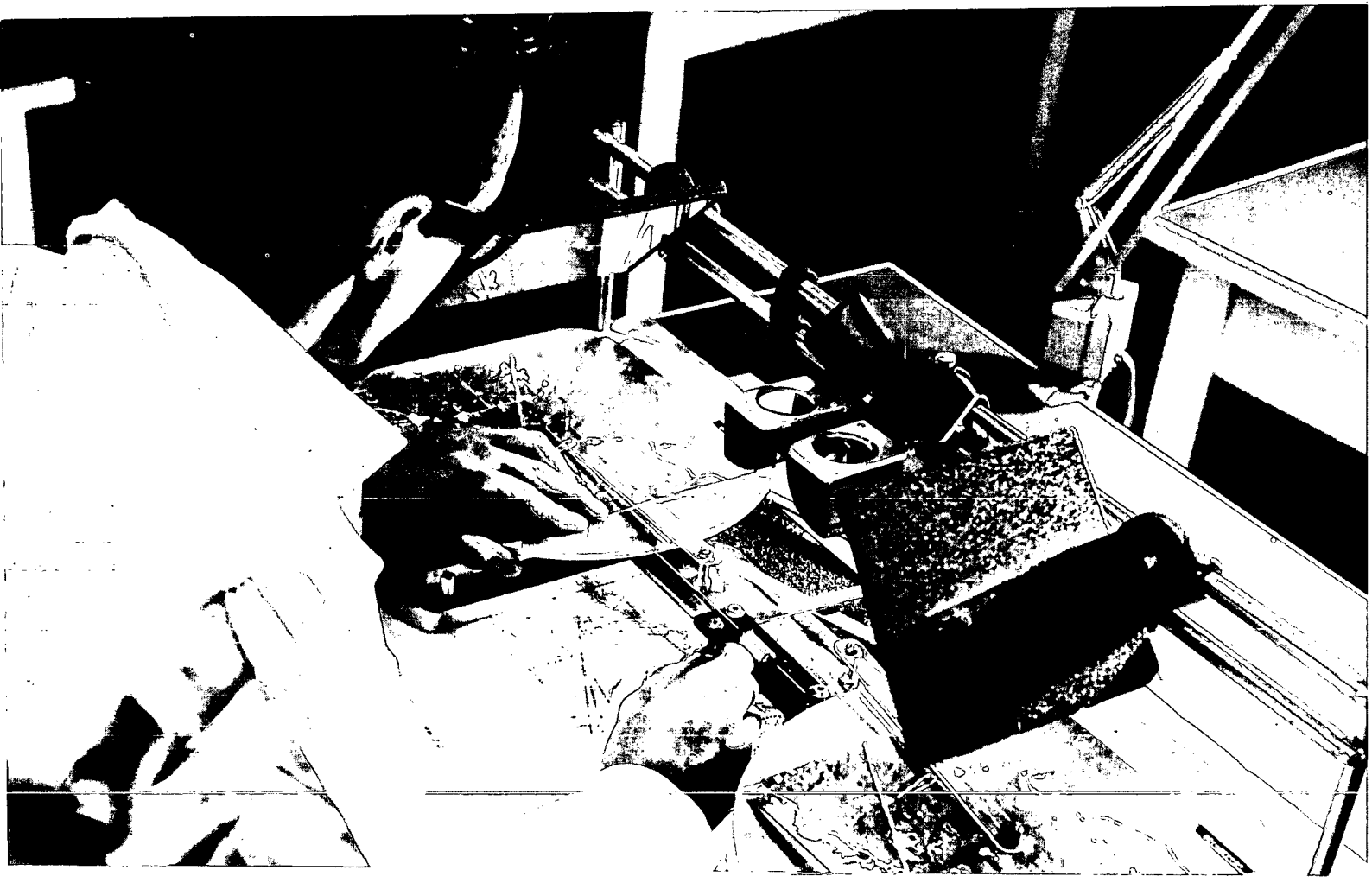
This programme provides training in the skills and techniques required in the harvesting of the forests and resource management. Applicants for this programme will be given a common first year and in second year they will take either the Forestry Option or the Fish, Game, and Parks Option.

Forestry Option

Candidates have the opportunity to study and qualify for several categories of employment. The main emphasis of the courses offered will be in forest engineering, where he will study the organization and supervision of log production, costs, accounting, and logging systems and their applications in British Columbia. The candidate will become knowledgeable in sampling methods for inventory and logging development; in forest protection he will learn the basis of fire protection and suppression and losses due to insects and disease; in forest science he will learn the botanical characteristics of trees and wood and the growth and ecological characteristics of commercial species; in silviculture he will study regeneration surveys, planting or seeding, and nursery programmes. The course of study includes scaling, forest management, and the inspection of logging and milling operations.

Fish, Game, and Parks Option

The management of the fish, game, and parks resources of the Province are closely associated with the forest resources. The integration of these resources and their recreational values into a sound economic managerial programme is becoming increasingly important. Graduates in this option will receive a comprehensive background in forestry in the first year and will specialize in the fish, game, and parks resource subjects in the second year. Government agencies offer a limited number of excellent employment opportunities. For this reason the number of students registered in this option will be restricted and subject to review on a year-to-year basis.



ENGINEERING DIVISION

FOREST RESOURCE TECHNOLOGY

FORESTRY PROGRAMME

YEAR 1 — *Term 1*

No.	Subject	Hrs. per Wk. Lec.	Lab.
31.101	Writing in a Technical Context	2	1
32.101	Basic Technical Mathematics	3	2
45.101	Forest Science and Utilization I	4	3
45.103	Forest Measurement I	—	3/3
45.106	Photo Interpretation and Mapping I	1	3
45.110	Fire Control I	2	2
	Tutorial	—	2
	Library and Research	—	4
		12	23

Term 2

31.201	Writing in a Technical Context	2	1
32.246	Statistics I and II	3	2
45.201	Forest Science and Utilization II	4	3
45.202	Forest Measurement II	2	3/3
45.206	Photo Interpretation and Mapping II	1	3
45.208	Natural Resource Management	2	—
	Tutorial	—	2
	Library and Research	—	4
		14	21

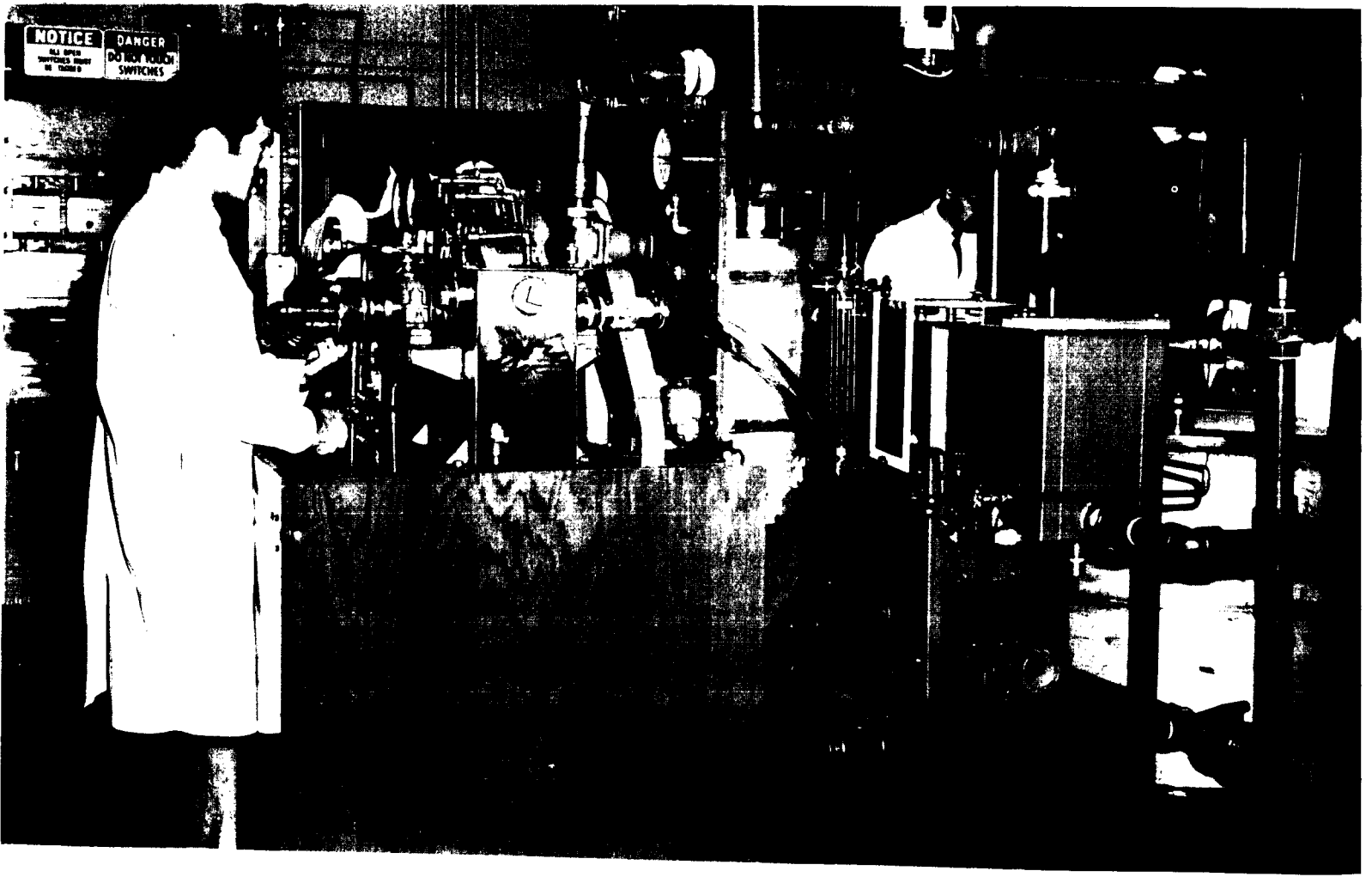
YEAR 2 — *Term 3*

No.	Subject	Forestry Option Hrs. per Wk. Lec.	Lab.	F.G.P. Option Hrs. per Wk. Lec.	Lab.
20.322	Human Relations	2	1	2	1
31.301	Writing in a Technical Context	1	1	1	1
44.324	Zoology	—	—	2	3
45.302	Forest Measurement III	1	6	—	—
45.305	Logging I	2	3	—	—
45.308	Roads and Transportation I	2	4	—	—
45.313	Forest Pestology I	1	3	—	—
45.316	Forest Management	2	2	—	—
45.321	Park Management	—	—	2	3
45.322	Wildlife Management I	—	—	2	3
45.323	Fish Management I	—	—	2	3
45.324	Public Administration	—	—	—	3
45.325	Public Information Techniques	—	—	—	2
	Tutorial	—	—	—	1
	Library and Research	—	4	—	4
		11	24	11	24

Term 4

14.351	Computer Applications	—	—	—	2
31.401	Writing in a Technical Context	1	1	1	1
45.402	Forest Measurement IV	1	3	—	—
45.405	Logging II	3	3	—	—
45.408	Roads and Transportation II	2	3	—	—
45.409	Silviculture	—	6	—	—
45.410	Fire Control II	1	3	—	—
45.413	Forest Pestology II	—	3	—	—
45.421	Wildland Recreation Management	—	—	2	5
45.422	Wildlife Management II	—	—	3	4
45.423	Fish Management II	—	—	3	4
45.426	Ecology	—	—	2	3
	Tutorial	—	1	—	1
	Library and Research	—	4	—	4
		8	27	11	24

General Prerequisite: Graduation on Academic-Technical Programme.
Special Prerequisite: Math. 12.
Special Prerequisites for Fish, Game, and Parks: Math. 12, Biology 11.


NOTICE
DANGER

Forest Resource Technology

FOREST PRODUCTS PROGRAMME

The modern forest industry of British Columbia offers challenging and rewarding employment for conscientious young people of ability and training. The demand increases yearly as the application of new technology continues in the pulp, newsprint, plywood, sawmill, and particle-board industries.

The objectives of the Forest Products Programme are to qualify technologists for the various manufacturing operations and to prepare them for responsible positions in British Columbia's largest industry. For example, young men with a good knowledge of technological advances and their application are needed in plant process operations, plant management, research and development, technical services, and sales.

In addition to the basic sciences of mathematics, chemistry, and physics, the specialized first-year subjects include an introduction to forest science, wood technology, sawmilling, plywood, and pulp and paper manufacture. This programme will assist the student in selecting, at the start of Term II in first year, one of two distinctly different options offered during the second year.

Wood Option

The Wood Option includes the techniques and economics involved in harvesting wood and converting it to usable products such as lumber, laminated beams, plywood, and particle-board. Wood seasoning, wood preservation, and fire-retardant treatments are also covered, as well as the integration of the forest industries for maximum utilization.

Wood Option students receive training in wood processing, wood properties, wood-products marketing, quality control (including lumber grading), work study, statistics, mechanical and electrical equipment, and kiln-drying. This option is designed to lead to employment in the sawmilling or plywood industry in such areas as management trainee in production, production control, or quality control.

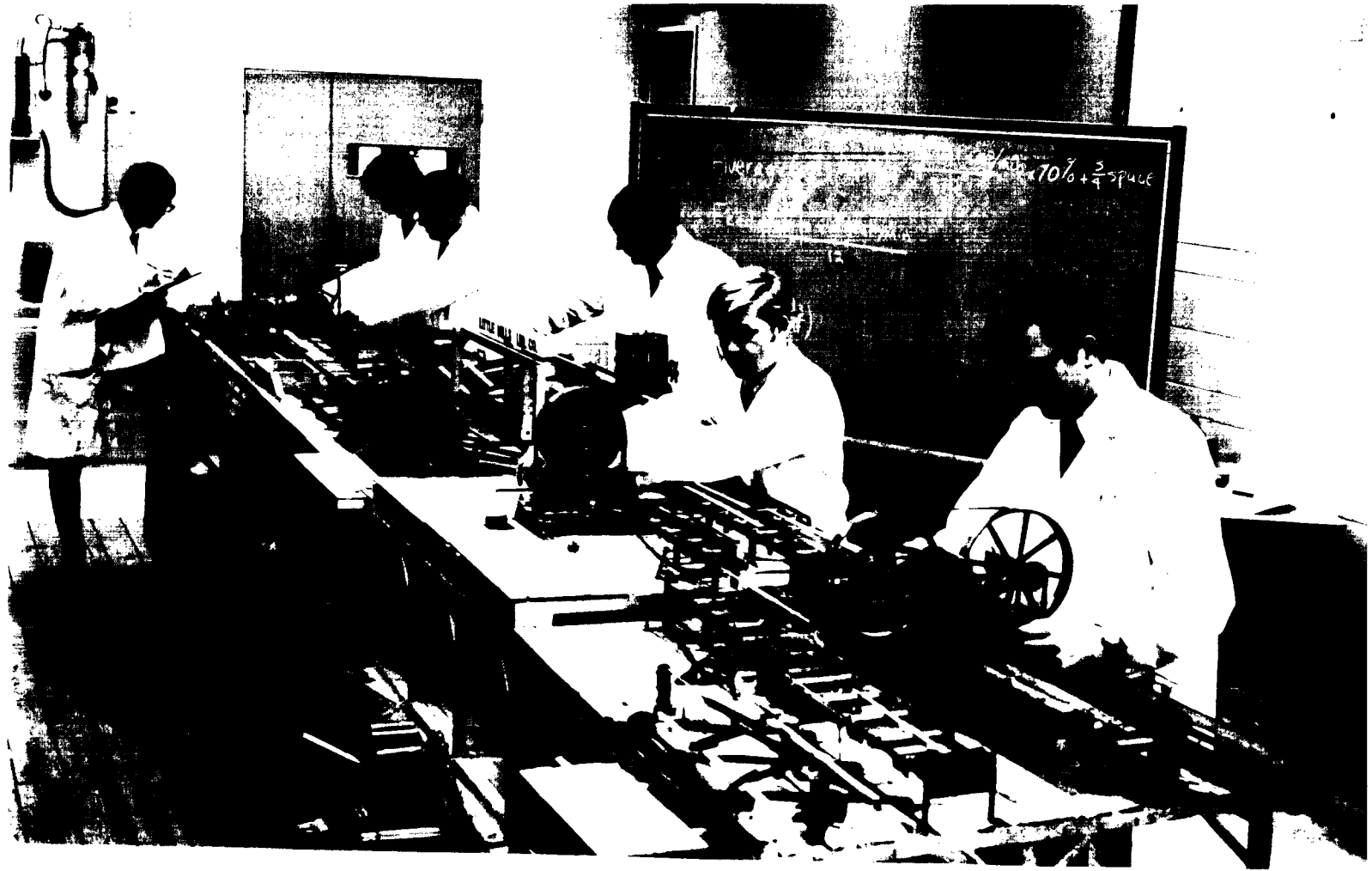
Pulp and Paper Option

The Pulp and Paper Option students are concerned with the theory and application of technology in mechanical and chemical pulping processes, the bleaching of various pulp types, and the conversion of pulp to end-products such as newsprint, paper, paperboard, and textiles.

The Pulp and Paper Option students receive training in pulp and paper technology and quality control, unit operations, instrumentation, wood chemistry, and chemical laboratory techniques.

Plant operation and process-control procedures are covered extensively by projects in a well-equipped pilot plant and laboratory facility. This facility is recognized by the Technical Section, Canadian Pulp & Paper Association, as a member mill. Field trips to various related industrial operations are undertaken to augment classroom and laboratory instruction.

To graduates, the industry offers interesting, challenging, and rewarding work, with ample opportunity for advancement in such areas as pulp production, process control, pulp and paper quality control, and research.


70% + 3/4 space

ENGINEERING DIVISION

FOREST RESOURCE TECHNOLOGY

FOREST PRODUCTS PROGRAMME

YEAR 1 — *Term 1*

No.	Subject	Hours per Week Lec.	Lab.
30.101	General Chemistry	3	3
31.101	Writing in a Technical Context	2	1
32.101	Basic Technical Mathematics	3	2
33.102	Introductory Physics	3	2
41.103	Engineering Materials	2	
45.101	Forest Science and Utilization I	4	3
49.101	Draughting	....	2
	Tutorials	....	2
	Library and Research	....	3
		17	18

Term 2

30.201	General Chemistry	3	3
31.201	Writing in a Technical Context	2	1
32.223	Calculus I and II	3	2
33.202	Introductory Physics	3	2
41.203	Engineering Materials	2	....
46.210	Introduction to Pulp and Paper	4	3*
46.212	Introduction to Wood Processing	4	3†
49.201	Draughting	....	2
	Tutorials	....	2
	Library and Research	....	3
		17	18

YEAR 2 — *Term 3*

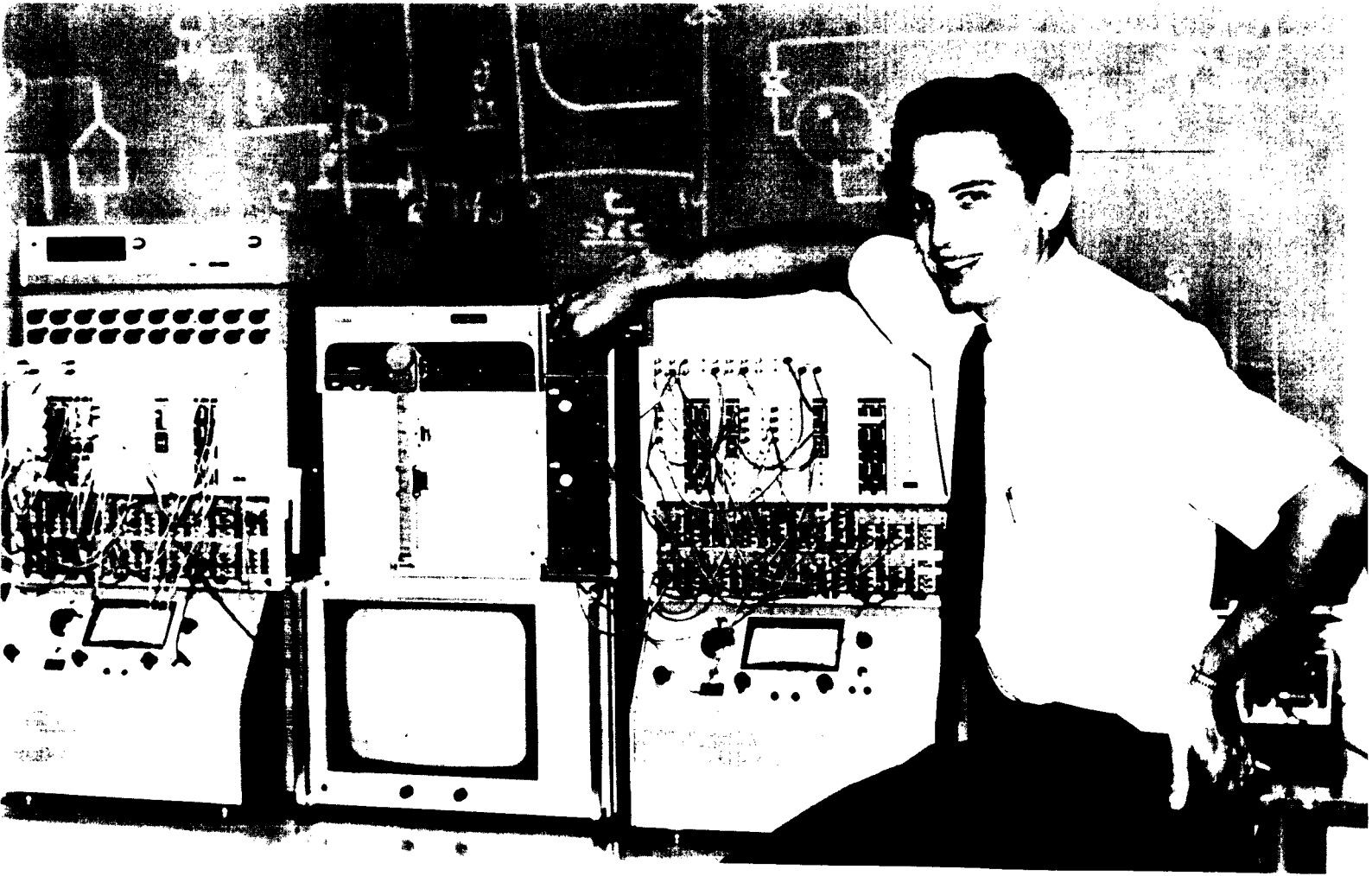
		Pulp and Paper Option		Wood Option	
No.	Subject	Hours per Week Lec.	Lab.	Hours per Week Lec.	Lab.
20.701	Wood Products Marketing	....	....	2	3
22.746	Introduction to Work Study	....	....	1	2
30.303	Instrumental Analytical Methods	2‡	2‡	....	....
30.304	Chemical Laboratory Techniques	....	3	....	3
31.301	Writing in a Technical Context	1	1	1	1
32.304	Statistics I	3	2	3	2
41.341	Unit Operations	3	3	....	....
46.301	Pulp and Paper Technology I	3	3	....	....
46.304	Pulp and Paper Testing I	2	3	....	....
46.311	Wood Properties I	....	....	2	4
46.314	Wood Processing I	....	....	2	3
48.350	Process Instrumentation	1	2	1	2
	Library and Research	....	3	....	3
		14	21	12	23

Term 4

30.303	Instrumental Analytical Method	2‡	2‡	....	....
31.401	Writing in a Technical Context	1	1	1	1
32.465	Statistics II and Numerical Methods	3	2	3	2
46.401	Pulp and Paper Technology II	3	3	....	....
46.404	Pulp and Paper Testing II	3	3	....	....
46.407	Wood Chemistry	2	3	....	....
46.411	Wood Properties II	....	....	2	3
46.414	Wood Processing II	....	....	3	4
46.417	Quality Control	....	....	2	3
46.421	Wood Products Management	....	....	....	3
46.451	Mechanical and Electrical Equipment	....	....	2	3
47.441	Unit Operations	3	3	....	....
	Library and Research	....	3	....	3
		16	19	13	22

* Pulp and Paper Option only.
† Wood Option only.
‡ Alternate weeks.

General Prerequisite: Graduation on the Academic-Technical Programme.
Special Prerequisites: Mathematics 12, Chemistry 11.



Engineering Division

Instrumentation and Systems Technology

Perhaps the most important single factor in industry today is the mastery of measurement. If reliable measurements are available from all parts of an industrial operation, the remaining steps toward automatic control are relatively straightforward. The sciences of measurement and control are thus closely related and both fall within the domain of *instrumentation.*

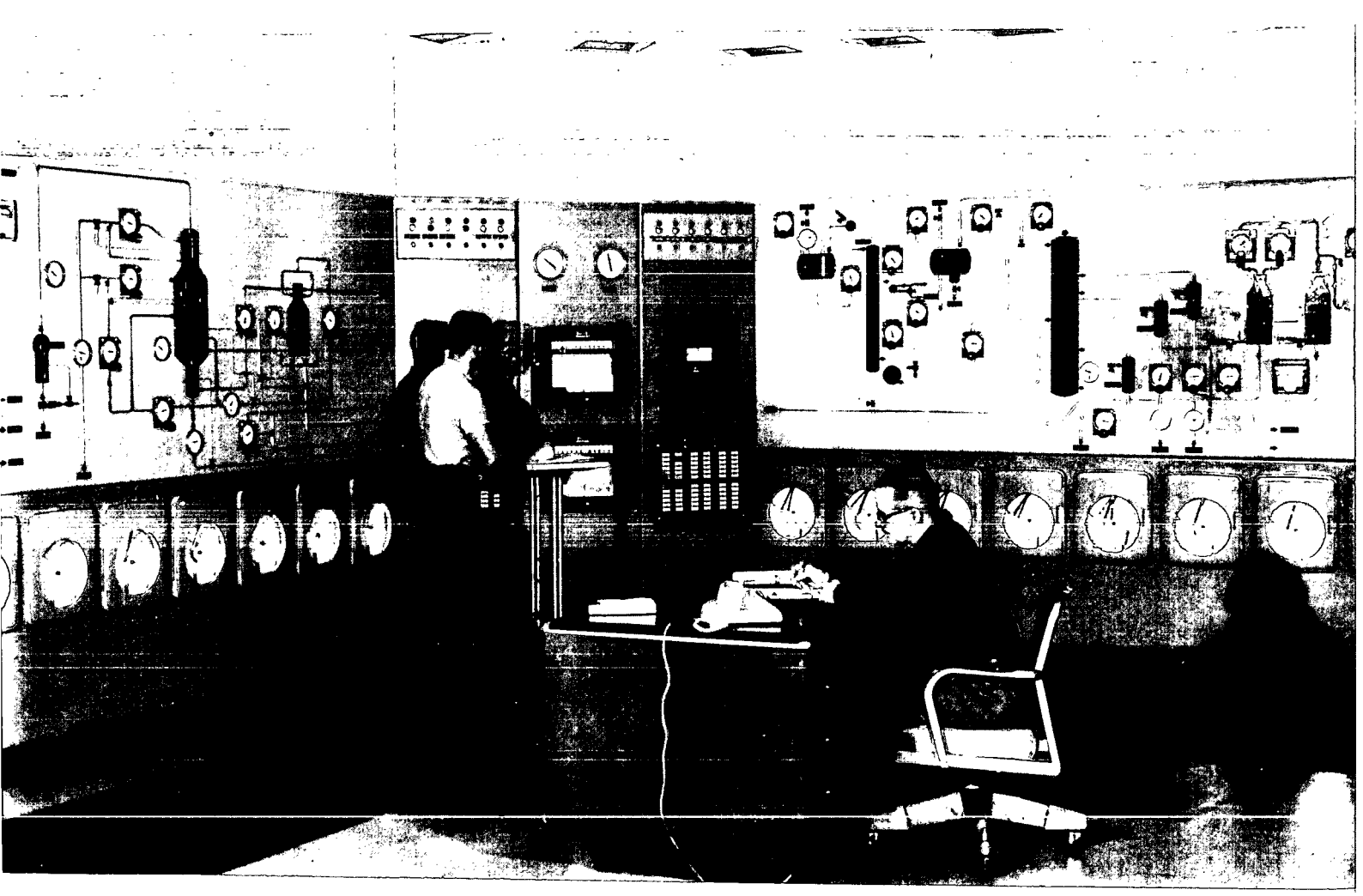
Process measurement may involve simple parameters such as temperature, pressure, flow, weight, or it may involve the complex analysis of a chemical composition. In a typical process there are hundreds of different measurements being continually relayed to a central control room. Measurement, therefore, covers the areas of sensing, signal transmission, and signal display. So the subject of *process measurement* is very much a part of modern automation. It should be noted that in this regard the term " process " may also include a freight yard, bottling-plant, automatic container-handling, and so on, as well as all the chemical processes.

In order to automate a process, certain process measurements must be selected for *control.* These measurements are compared with their desired control points to see whether errors exist; if errors do exist, signals are sent back to the process to correct the settling of a valve, damper, conveyor, etc. In its simplest form each control " loop " is handled by a separate controller. Today, however, there is a fast-growing trend toward handling all loops on a central computer so that it now becomes possible to optimize the complete plant operation rather than merely maintain control levels. There is currently much industrial activity centred around the adaptation of computers to plants, and vice versa.

The space race is responsible for much of the rapid growth in instrumentation over the last decade. Advances in electronics and fluidics are adding a whole new dimension to the scope of automatic control.

From the above description you will see why instrumentation today is often referred to as *systems* engineering. Persons considering a career in this field should show strength and interest in mathematics, physics, and chemistry (*see* prerequisites). The record shows that over half the graduates can expect to be placed in engineering or research departments, while the remainder may find their way into plant work or sales.

Perusal of the Subject Summaries at the end of this booklet will give details of the course. Concentration on some basic " academics " is needed in the early stages to equip students with the proper depth of understanding. Primary areas of specialization are to be found in the subjects Process Measurement, Process Control, and Computer Techniques.



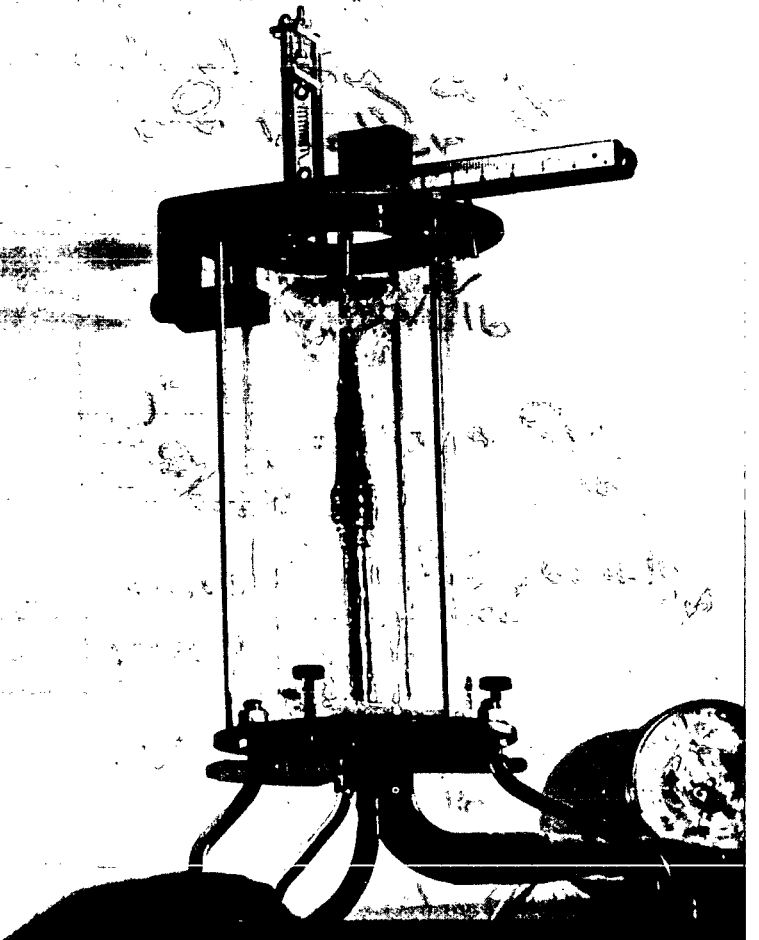
ENGINEERING DIVISION

INSTRUMENTATION AND SYSTEMS TECHNOLOGY

No.	Subject	Hours per Week Lec.	Lab.
	YEAR 1 *Term 1*		
30.102	Chemistry	2	3*
31.101	Writing in a Technical Context	2	1
32.101	Basic Technical Mathematics	3	2
33.106	Physics	3	2
41.103	Engineering Materials	2	3*
43.132	Electrical Fundamentals	3	3*
48.100	Process Measurements	3	3
	Tutorial		1
	Reading		4
		18	16/19
	Term 2		
30.202	Chemistry	2	3*
31.201	Writing in a Technical Context	2	1
32.223	Calculus I and II	3	2
33.206	Physics	3	2
41.203	Engineering Materials	2	3*
43.232	Electrical Fundamentals	3	3*
48.200	Process Measurements	3	3
	Tutorial and Shop Practice		2†
	Reading		3
		18	16/19
	YEAR 2 *Term 3*		
32.306	Calculus III	3	2
41.341	Unit Operations	3	3*
48.300	Process Measurements	3	3
48.310	Process Control	3	3
48.320	Computer Techniques	3	3*
48.330	Instrument Techniques	3	3*
	Reading		5
		18	16/19
	Term 4		
32.454	Numerical Methods and Statistics I	3	2
41.441	Unit Operations	3	3*
48.400	Process Measurements	3	3
48.410	Process Control	3	3
48.420	Computer Techniques	3	3*
48.430	Instrument Techniques	3	3*
	Reading		5
		18	16/19

* Alternate weeks.
† Three hours of shop every three weeks.

General Prerequisite: Graduation on the Academic-Technical Programme.
Special Prerequisites: Mathematics 12, plus Physics 11 and Chemistry 11.



Mechanical Technology

Mechanical Technology encompasses an extremely broad range of industrial activities involving design, construction, installation, and use of machines and mechanical devices of all types, as well as the manufacture of goods in general. It follows that persons qualified in this field can expect challenging and rewarding employment in a wide range of interesting occupations.

The two-year Mechanical Technology programme offers intensive training leading to graduation as a mechanical technologist. Job possibilities include work in consulting engineering offices as mechanical design draughtsmen on machinery, steelwork, piping, power plants, and installation; in plant engineering offices, production departments, and estimating departments; in testing and inspection establishments; in field installation and service; and in machinery sales.

The programme includes studies in mathematics and physics plus specialized subjects such as engineering materials, draughting, strength of materials, machine design, fluid mechanics, fluid power, thermal engineering, electricity, and machine tools. Theory presented in lectures is directly applied in problem periods, design drawing sessions, and laboratory assignments utilizing excellently equipped laboratories and shops. In the thermodynamics laboratory, for example, students operate and test steam boilers, air compressors, a steam turbine, gas turbine, dual-fuel engine, and other equipment, while in the machine shop they use engine lathes, milling machines, a turret lathe, jig borer, boring mill, precision grinders, punch press, and other modern equipment. In the fluid mechanics laboratory, students use sets of miniaturized equipments to perform many standard hydraulics experiments. In the fluid power laboratory, industrial and training circuits are designed, constructed, and operated, utilizing standard industrial components.

To augment these studies, field trips are made to industrial plants to observe practical installations and operations. Close liaison with industry ensures that graduates are trained to meet the exacting and varying requirements of industry. Coincidentally, this liaison acquaints students with the range of opportunities available and assists them in selecting their individual areas of greatest interest.

To span the broad field of Mechanical Technology, two options are provided, subject to adequate enrolment in each—(1) Production, (2) Design. Choice of option will be made at the end of the first year.

Those best suited to take advantage of this training will be students interested in applying scientific knowledge to practical use in the mechanical field. The aspiring technologist must have a sound grounding in mathematics and physics, and should be able to apply ideas in practical situations. Because the mechanical technologist normally functions as a key member of a closely knit team of engineers, production supervisors, craftsmen, and others, his ability to work with people effectively and congenially is essential. Working conditions generally are attractive, and physical requirements are not demanding.

ENGINEERING DIVISION

MECHANICAL TECHNOLOGY

YEAR 1 — *Term 1*

No.	Subject	Hours per Week Lec.	Lab.
31.101	Writing in a Technical Context	2	1
32.101	Basic Technical Mathematics	3	2
33.107	General Physics (C1)	3	2
41.103	Engineering Materials	2	3*
49.101	Draughting	....	2
49.105	Applied Mechanics	3	3*
49.150	Production Engineering	2	2
49.165	Shopwork	....	3
	Library and Research	....	5
		15	20

Term 2

31.201	Writing in a Technical Context	2	1
32.223	Calculus I and II	3	2
33.207	General Physics (C2)	3	2
41.203	Engineering Materials	2	3*
49.201	Draughting	....	2
49.210	Strength of Materials	3	3*
49.225	Applied Heat	1	1
49.250	Production Engineering	2	2
49.265	Shopwork	....	3
	Library and Research	....	3
		16	19

YEAR 2 — *Term 3*

No.	Subject	PRODUCTION OPTION Hours per Week Lec.	Lab.	DESIGN OPTION Hours per Week Lec.	Lab.
22.737	Work Study I	1	2	....	....
22.746	Introduction to Work Study	....	....	1	2
31.301	Writing in a Technical Context	1	1	1	1
32.305	Numerical Methods	3	2	3	2
43.331	Electrical Equipment Applications	2	1	2	1
48.350	Process Instrumentation	....	....	1	2
49.301	Engineering Graphics	....	2	....	2
49.312	Machine Design	3	2	3	2
49.315	Fluid Mechanics	2	2	2	2
49.325	Thermal Engineering	....	....	2	3
49.350	Production Engineering	2	2	....	....
49.365	Shopwork	....	3	....	....
	Library and Research	....	4	....	3
		14	21	15	20

Term 4

22.747	Work Study II	1	3	....	....
31.401	Writing in a Technical Context	1	1	1	1
32.464	Calculus III and Statistics I	3	2	3	2
48.450	Process Instrumentation	....	....	1	2
49.412	Machine Design	....	....	3	2
49.425	Thermal Engineering	....	....	3	3
49.435	Fluid Power	2	3	2	3
49.445	Manufacturing Processes	2	4*	....	....
49.450	Production Engineering	2	2	....	....
49.455	Tool Design	1	2	1	2
49.465	Shopwork	....	3	....	3
	Library and Research	....	5	....	3
		12	23	14	21

* Alternate weeks.

General Prerequisite: Graduation on the Academic-Technical Programme.

Special Prerequisites: Mathematics 12, Physics 11.

Mining Technology

During the past decade as a supplier of metals to the entire world, Canada has been increasing its share of the market and has now become a major producer of such metals as iron, asbestos, lead, nickel, silver, and zinc. Western Canada is now about to experience an unprecedented expansion of the mining industry. Exploration in British Columbia and the Yukon is more active than anywhere in North America, and the area is considered to be the most promising mineral-bearing region on the continent. Coupled with this is the great interest shown in the non-metallic mineral deposits now being developed on the Prairies. Several major discoveries, currently being examined, offer reasonable assurance of production and consequent demand for engineers and technicians.

Because of strong international competition, the higher costs of operation in our rugged terrain, and the increasingly complex ores now being sought, the industry is becoming much more reliant upon engineering imagination and technological skill.

The programme of Mining Technology is designed to serve this major industry by preparing technicians to help search for new mineral deposits, develop and operate new mines, and design and operate new mineral-processing plants. Most students who complete this programme can expect to enter the industry as exploration assistants mapping structure, logging drill core, or performing geophysical and geochemical tests in the field; as engineering assistants sampling developed rock, surveying in pits or underground, or doing production control work in mines; or as test laboratory technicians, assayers, or junior operating staff in mineral-processing plants.

Opportunities for advancement in this industry are good for a person of ability and initiative, and, possibly within 5 years of graduation, he might well achieve a supervisory rank as party chief, shiftboss, or foreman.

Men entering the mining industry should be able to get along with people, be able to enjoy life in smaller communities, and be willing to travel. They should also have good health and be able to pass a medical examination and chest X-ray if they wish to work in or around a mine.

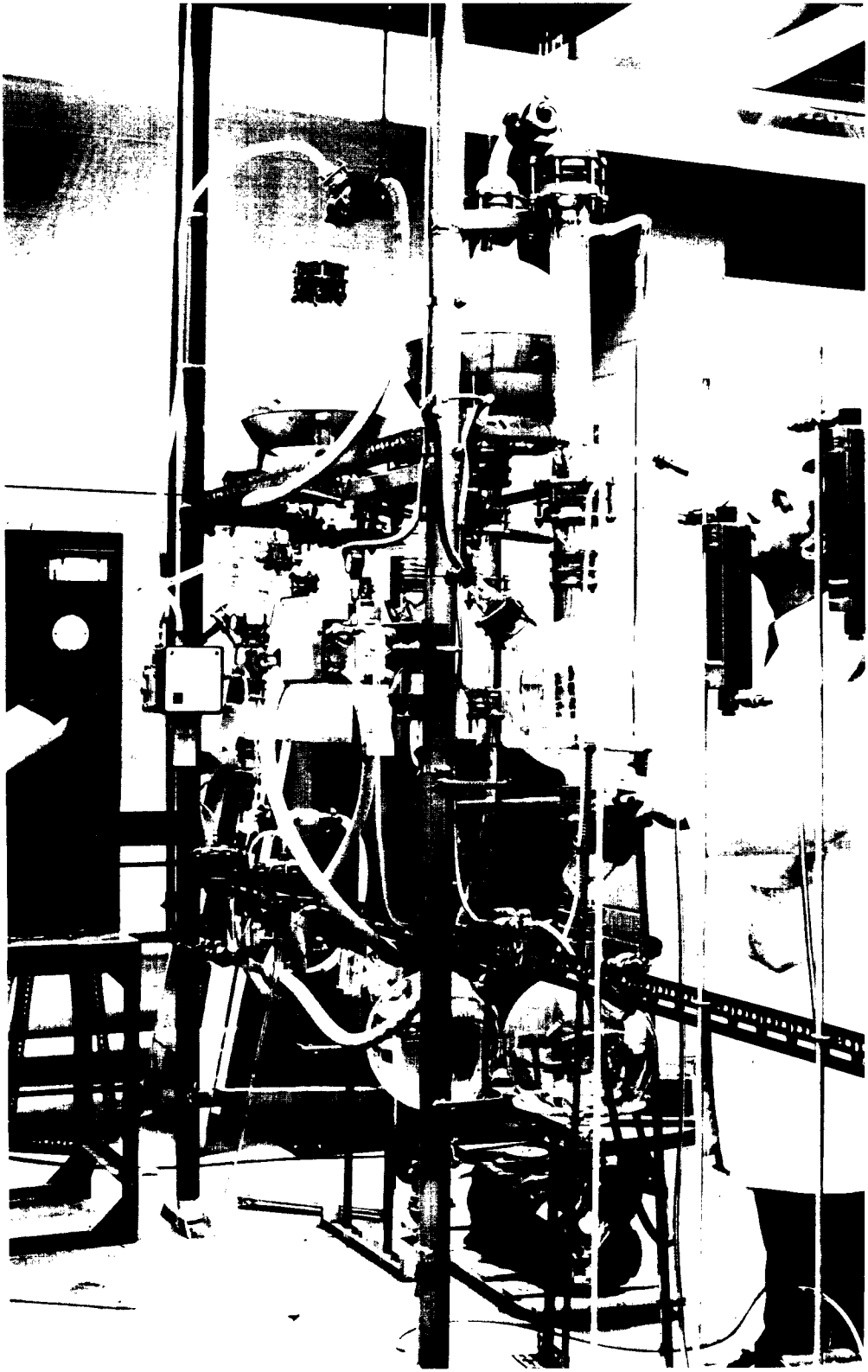
ENGINEERING DIVISION

MINING TECHNOLOGY

No.	Subject	Hours per Week Lec.	Lab.
	YEAR 1 *Term 1*		
30.101	General Chemistry	3	3
31.101	Writing in a Technical Context	2	1
32.101	Basic Technical Mathematics	3	2
33.101	General Physics (A1)	3	3
49.101	Draughting	---	2
50.101	Geology	2	2*
50.102	Mining	2	---
51.102	Surveying	---	3
	Library and Research	---	6/4
		15	20
	Term 2		
30.201	General Chemistry	3	3
31.201	Writing in a Technical Context	2	1
32.223	Calculus I and II	3	2
33.201	General Physics (A2)	3	3
49.201	Draughting	---	2
50.201	Geology	2	2*
50.202	Mining	2	---
51.202	Surveying	---	3
	Library and Research	---	6/4
		15	20
	YEAR 2 *Term 3*		
31.301	Writing in a Technical Context	1	1
32.305	Numerical Methods	3	2
33.304	Introduction to Geophysical Prospecting Methods	---	3*
41.305	Assaying	1	3
41.314	Mineral Processing	2	3*
42.103	Statics	2	2
50.301	Geology—Structural	2	3*
50.302	Mining—Operation and Equipment	2	3*
51.310	Surveying	---	3
	Library and Research	---	5
		13	22
	Term 4		
31.401	Writing in a Technical Context	1	1
32.464	Calculus III and Statistics 1	3	2
41.405	Assaying	1	3
41.414	Mineral Processing	2	3*
42.202	Hydraulics	2	2*
42.205	Strength of Materials	---	2
50.401	Geology—Mineral Deposits	2	3*
50.402	Mining—Operation and Equipment	2	2
51.410	Surveying	---	3
	Library and Research	---	6/4
		13	22

* Alternate weeks.

General Prerequisite: Graduation on the Academic-Technical Programme.
Special Prerequisites: Mathematics 12, Physics 11, Chemistry 11.



Natural Gas and Petroleum Technology

The gas and oil industry offers a wide variety of employment opportunities for a qualified technician. The transmission branch of the industry, involving the operation of pumping stations and maintenance of pipe-lines over vast areas, offers graduates opportunity for outdoor work in remote regions. On the other hand, the refining branch of the industry, usually located in more populous areas, offers a stable source of interesting work if this is preferred. Moreover, the industry as a whole is one of the most modern and up to date and is constantly introducing the latest technological improvements. Thus, there is every opportunity for a keen technician to advance in an interesting and profitable vocation.

The first year of the programme offered at the Institute primarily covers basic scientific and engineering principles as a foundation for the subsequent specialized petrochemical training. Training will be provided in the distribution and utilization of gas in both industrial and domestic fields, and there will be considerable emphasis on measurement and automatic control since the trend is toward completely unmanned automatic installations. Tuition will be given in the transmission of oil and its utilization in modern automatically controlled refineries, and there will be emphasis on the chemistry of petroleum products. The course will include a brief orientation course in business practices, computer programming, and frequent opportunities for field trips to local installations.

Students desiring to enter this field should have a keen interest in the operation of large-scale equipment, as distinct from its maintenance and repair, and should have a good academic standing in chemistry and physics. Although in modern refineries most of the time may be spent indoors, technicians should be prepared to work outdoors for lengthy periods. They must be prepared, in the plant operations, to take great responsibility for the satisfactory and safe operation of highly complex plant equipment.

Employment opportunities for technicians include laboratory work, studies of corrosion of above-ground and buried structures, analysis of oils, gases, and petroleum products, right-of-way land work, and plant operation in pumping stations and refineries. With such a variety of opportunities, a qualified technician should have no difficulty in establishing himself in a profitable and interesting career.

ENGINEERING DIVISION

NATURAL GAS AND PETROLEUM TECHNOLOGY

YEAR 1 — *Term 1*

No.	Subject	Hours per Week Lec.	Lab.
10.730	Business	2	1
30.101	General Chemistry	3	3
31.101	Writing in a Technical Context	2	1
32.101	Basic Technical Mathematics	3	2
33.101	General Physics (A1)	3	3
41.103	Engineering Materials	2	3*
50.101	Geology	2	2*
	Library and Research	—	5/6
		17	18

Term 2

22.746	Introduction to Work Study	2	—
30.201	General Chemistry	3	3
31.201	Writing in a Technical Context	2	1
32.223	Calculus I and II	3	2
33.201	General Physics (A2)	3	3
49.266	Introduction to Machine Tools	1	1
50.201	Geology	2	2*
51.104	Surveying	—	3
	Library and Research	—	6/4
		16	19

YEAR 2 — *Term 3*

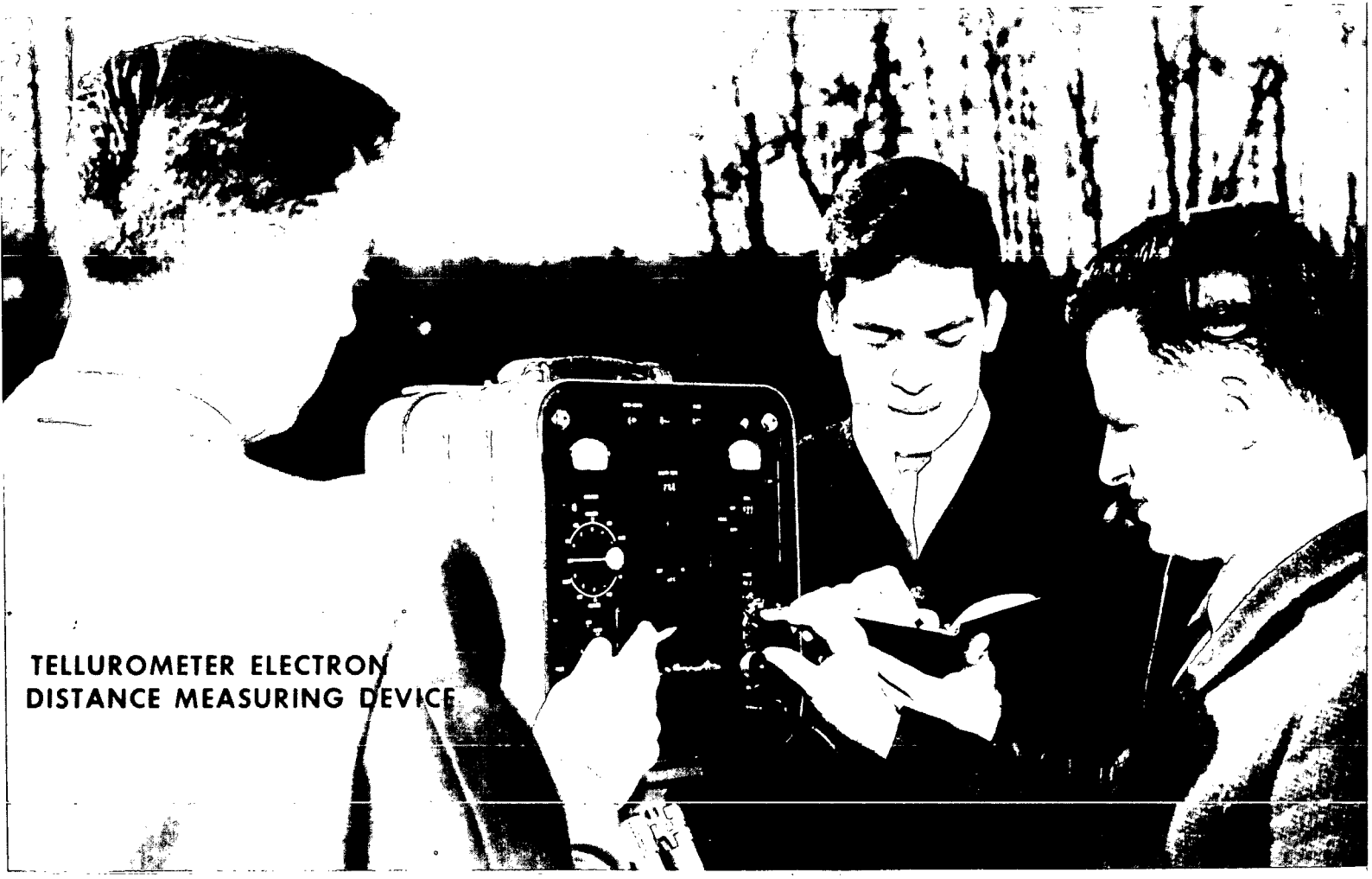
30.302	Physical Chemistry	2	3
32.305	Numerical Methods	3	2
41.341	Unit Operations	3	3
47.311	Gas and Oil Production and Transmission	3	3
47.221	Gas Distribution and Utilization	3	3
48.350	Process Instrumentation	—	3
	Library and Research	—	4
		14	21

Term 4

14.351	Computer Applications	2	—
30.404	Organic Chemistry	2	3
32.464	Calculus III and Statistics I	3	2
41.441	Unit Operations	3	3
47.431	Oil Refining and Utilization	5	4
48.450	Process Instrumentation	—	3
	Library and Research	—	5
		15	20

* Alternate weeks.

General Prerequisite: Graduation on the Academic-Technical Programme.
Special Prerequisites: Mathematics 12, Physics 11, Chemistry 11.



TELLUROMETER ELECTRON
DISTANCE MEASURING DEVICE

Surveying Technology

Survey techniques have undergone radical changes during the last two decades, due largely to advances in the development of electronic devices which are capable of measuring distance up to 40 miles with an accuracy of three parts per million, and significant refinements which have been made in photographic equipment and their applications to aerial photogrammetry.

The two-year programme in the Surveying Technology has two main objectives. The first is to equip the student with the required knowledge of mathematics, physics, astronomy, photogrammetry, and theory of surveying, together with the practical skills in note-keeping, draughting, field operations, and calculating so that he may be employed as a surveying or engineering assistant in the various fields where survey techniques are used. The second objective is to provide those students with the knowledge and skills which, with experience, will eventually qualify them as members of the Corporation of Land Surveyors of British Columbia.

Intensive courses will be given in mathematics, physics, photogrammetry, astronomy, natural science, and descriptions for deeds, in which the standards are those required by the Corporation of Land Surveyors of British Columbia.

Employment opportunities in survey fields are widely varied. Surveyors, consulting engineers, the oil and gas industry, government mapping departments, government highway departments, utility companies and civic planning and engineering departments are among those that offer employment to graduates. Areas of employment in Canada range from the southern border to the Arctic regions and from the Pacific to the Atlantic Ocean and many Canadian surveyors are employed on large mapping projects throughout the world.

The student requires a good basic understanding of mathematics and physics to the University Entrance level and should also be physically and mentally suited to outdoor and office work.

In the second year the students may study in the Survey or Photogrammetry Option.

ENGINEERING DIVISION

SURVEYING TECHNOLOGY

No.	YEAR 1 — *Term 1* — Subject	Hours per Week Lec.	Lab.
31.101	Writing in a Technical Context	2	1
32.101	Basic Technical Mathematics	3	2
33.107	General Physics (C1)	3	2
49.101	Draughting	—	2
51.101	Surveying	3	8
	Tutorials	—	4
	Library and Research	—	5
		11	24

Term 2

31.201	Writing in a Technical Context	2	1
32.246	Statistics I and Spherical Trigonometry	3	2
33.207	General Physics (C2)	3	2
49.201	Draughting	—	2
51.203	Natural Sciences	1	2
51.201	Surveying	2	8
	Tutorials	—	2
	Library and Research	—	5
		11	24

SURVEY OPTION

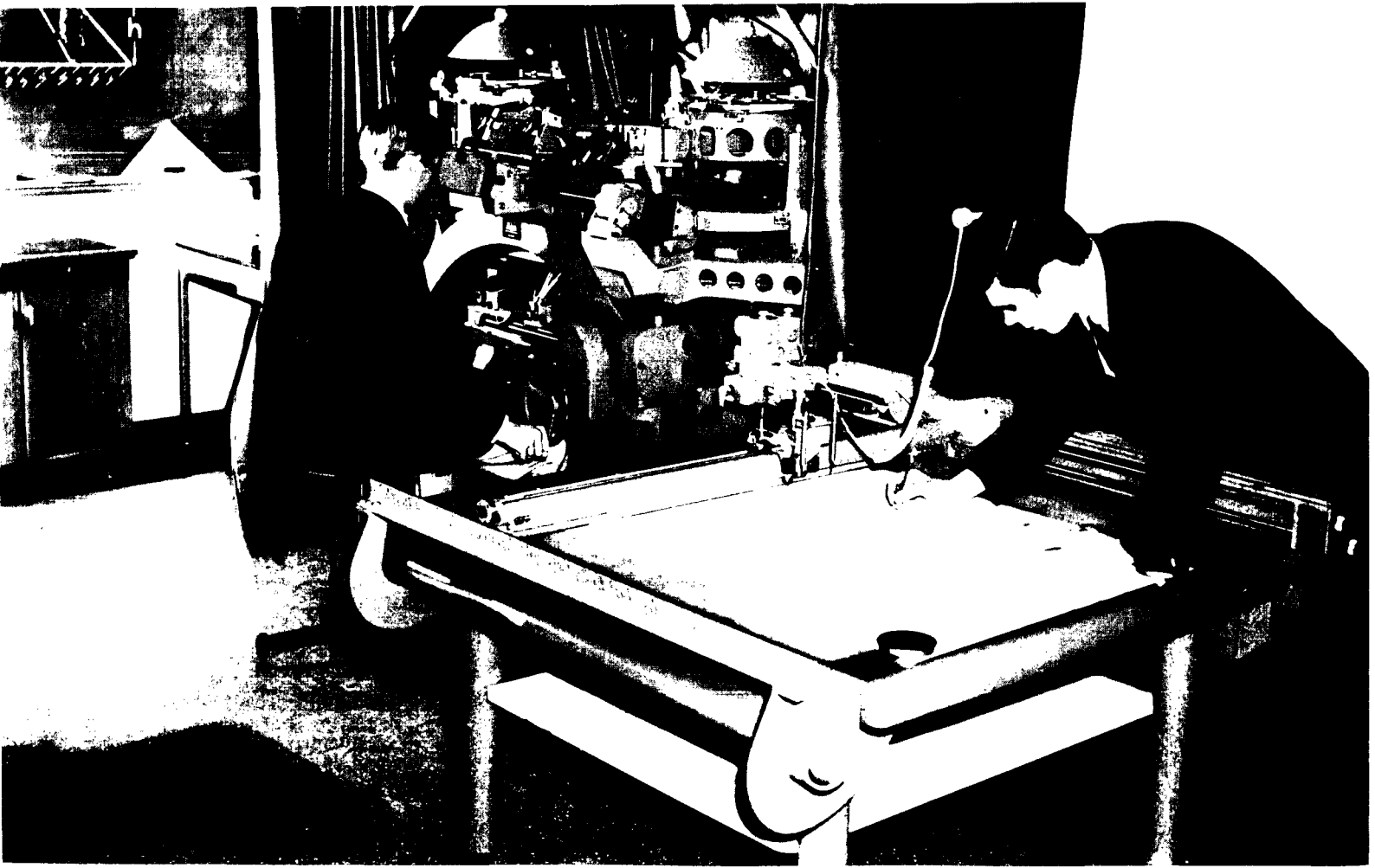
YEAR 2 — *Term 3*

32.302	Calculus I	3	2
51.301	Plane Surveying II	1	—
51.302	Geodetic Surveying II	1	—
51.303	Computations II A and B	1	2
51.304	Field Surveying II	1	6
51.305	Draughting	—	4
51.306	Astronomy	2	—
51.307	Photogrammetry	2	—
51.308	Description for Deeds	2	—
	Tutorials	—	3
	Library and Research	—	5
		13	22

Term 4

32.436	Calculus II and Statistics II	3	2
51.401	Plane Surveying A II	1	—
51.402	Geodetic Surveying B II	1	—
51.403	Computations II A and B	1	2
51.404	Field Surveying II	—	9
51.406	Astronomy	2	2
51.407	Photogrammetry	2	2
	Tutorials	—	3
	Library and Research	—	5
		10	25

General Prerequisite: Graduation on the Academic-Technical Programme.
Special Prerequisites: Mathematics 12, Physics 11.



ENGINEERING DIVISION

SURVEYING TECHNOLOGY

PHOTOGRAMMETRY OPTION

YEAR 2 — *Term 3*

No.	Subject	Hours per Week Lec.	Lab.
32.302	Calculus I	3	2
51.306	Astronomy	2	- -
51.311	Surveying	2	0/3*
51.313	Draughting	1	3
51.317	Photogrammetry	3	12/9*
	Tutorials	- -	2
	Library and Research	- -	5
		11	24

Term 4

32.436	Calculus II and Statistics II	3	2
51.406	Astronomy	2	2
51.411	Surveying	2	3*
51.417	Photogrammetry	3	11
	Tutorials	- -	2
	Library and Research	- -	5
		10	25

* Alternate weeks.

Health Division

The rising demand for health services, together with the increasingly complex scientific and social aspects of such services, is opening up new and challenging employment opportunities for a wide range of specialist health technologists.

The Health Technology training programmes, developed with the advice and counsel of leaders in the health sciences, and operated in conjunction with health facilities within the community, aim to produce technologists at a level of education and training suited to the need in the health field.

It is intended that the education provided will develop in the graduate a general understanding of the cultural and health environment in which he or she is to work. The training in the specific areas of choice will be sufficiently detailed to provide the skills necessary to the specialty.

It is expected that the health technologist will work at a level between the professional and vocational worker, acting as a junior colleague or in immediate support of the professional whose responsibilities in the field of health have to do with prevention, diagnosis and treatment, or research.

Wherever possible, students in the Health Technology training programmes will receive common instruction in order to encourage mutual understanding and foster an atmosphere of harmony between them and other workers in the health field. Further, where practicable, this training will be integrated with that of students in other technological programmes, thus enriching the training of both.

Eight training programmes, open to male or female applicants, are offered in Health Technology. Details of the present programmes listed below will be found in the succeeding pages:

Biomedical Electronics and Electroneurophysiology Option.
Health Data Technology.
Medical Laboratory.
Medical Radiography.
Nuclear Medicine.
Nursing.
Public Health and Pollution Control.
Respiratory Technology.


BCIT

Health Division

DEPARTMENT OF ENVIRONMENTAL AND HEALTH ENGINEERING SERVICES

Biomedical Electronics Programme

In recent years there has been a growing demand for skilled professionals who have been trained in both medicine and engineering. The development of artificial kidneys, hearts, blood vessels, and many other complicated structures for service in the human body has called for a unique combination of interests and aptitudes on the part of those responsible for their design. The widespread use of medical electronic apparatus for the measurement of blood flow, pulse rate, respiration, nerve activity, and other bodily functions has further increased this demand. This trend will accelerate in the future.

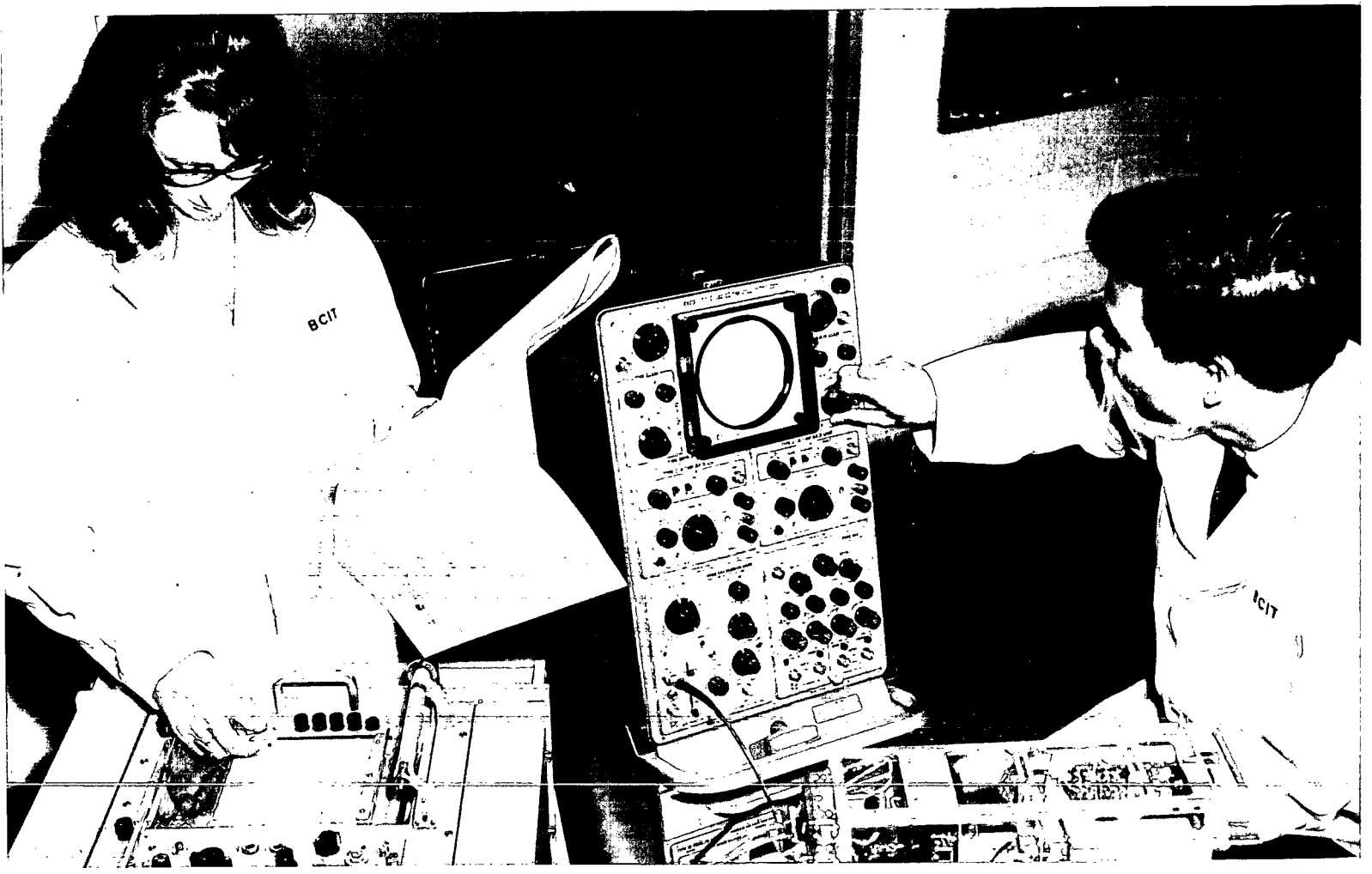
In order to meet the need for technologists in this field, the British Columbia Institute of Technology has developed the Biomedical Electronics Programme and its second-year option, Electroneurophysiology. The Biomedical Electronics Programme, a course of two years' duration, provides the education and training required for the technologist who works in close association with the medical engineers and physicians engaged in operating, maintaining, and designing scientific medical equipment. The Electroneurophysiology Option trains students specifically for that area of biomedical electronics which is concerned with the investigation of the nervous system and the treatment of its disorders. Only a limited number of students may select this option after completing the first year of the Biomedical Electronics Programme.

In both years of study the student will learn the fundamentals necessary to the understanding of the medical and technical aspects of the specialty. Mathematics and electronics play a large part in the training, as does detailed study of the processes which take place in the human body.

Many opportunities are open to the graduate with a Diploma of Technology in Biomedical Electronics. Employment will be found in the fields of research, development and production, sales, installation, operation, and servicing. The technologist may work in a hospital, a university, or in a factory. His work and studies bring him into close contact with a wide range of workers in the health field.

Persons wishing to enter this new field of dramatic growth should be interested in the welfare of people and have an aptitude for things mechanical and electrical.

For other programmes in Electronics *see* "Electrical and Electronics Technology."


BCIT
BCIT

HEALTH DIVISION

DEPARTMENT OF ENVIRONMENTAL AND HEALTH ENGINEERING SERVICES

BIOMEDICAL ELECTRONICS PROGRAMME

YEAR 1 — *Term 1*

No.	Subject	Hours per Week Lec.	Lab.
30.103	General Chemistry for Health Technologists	3	3
31.101	Writing in a Technical Context	2	1
32.170	Basic Mathematics (Electrical)	5	4
43.102	Electrical Circuits	5	4
78.101	Introduction to Biomedical Electronics		2
98.101	Human Anatomy and Physiology	2	2
	Tutorials		1
	Library and Research		1
		17	18

Term 2

30.203	General Chemistry for Health Technologists	3	3
31.201	Writing in a Technical Context	2	1
32.270	Calculus (Electrical)	6	4
43.202	Electrical Circuits	3	3
43.205	Electronic Circuits	2	2
98.201	Human Anatomy and Physiology	2	2
	Library and Research		2
		18	17

YEAR 2 — *Term 3*

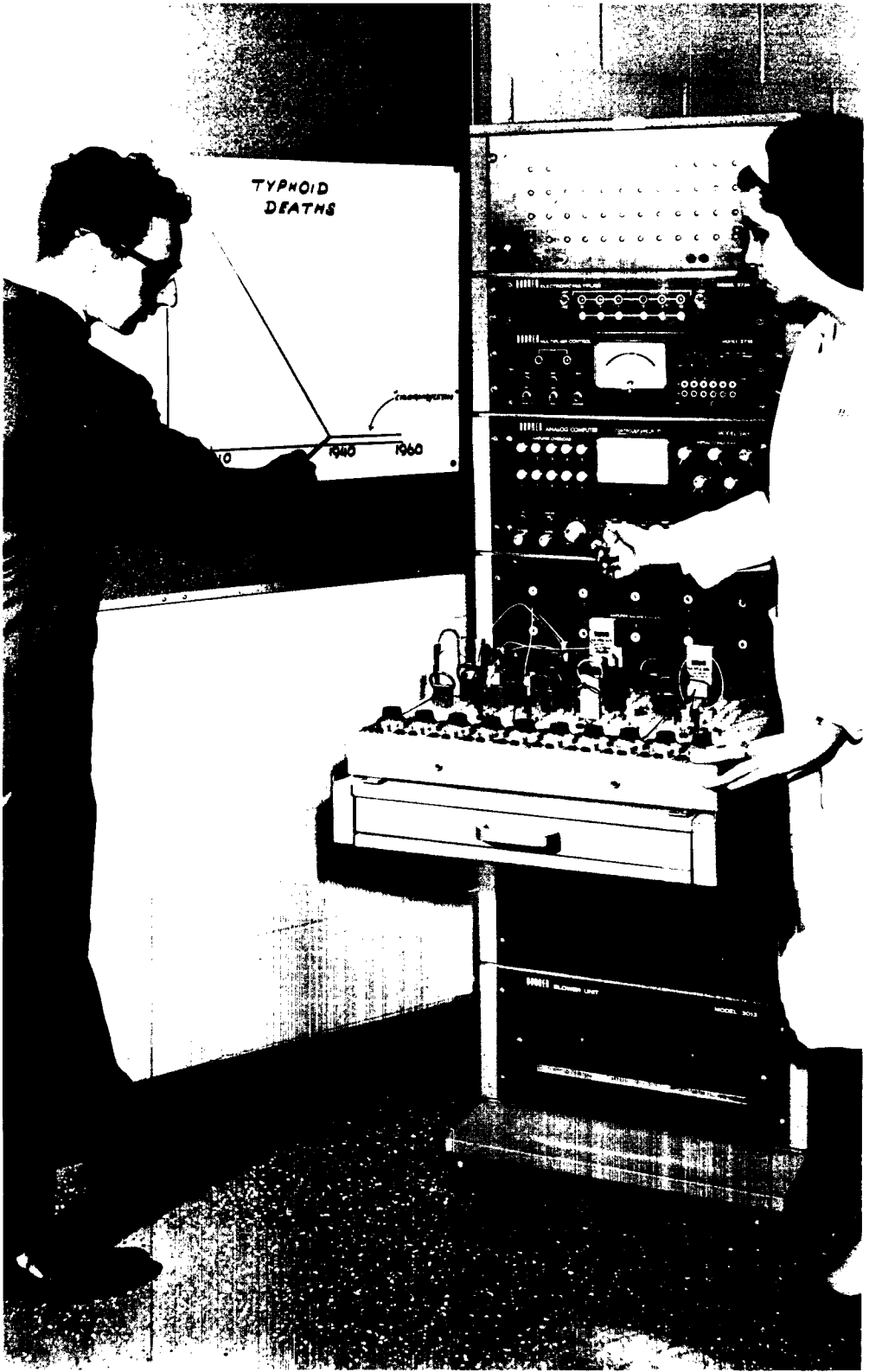
		BIOMEDICAL ELECTRONICS OPTION		ELECTRONEUROPHYSIOLOGY OPTION	
No.	Subject	Lec.	Lab.	Lec.	Lab.
32.370	Transform Calculus (Electrical)	3	2	3	2
33.330	Biophysics	1*	2*	1*	2*
43.303	Digital Techniques	3	2	3	2
43.320	Measurements Electrical and Electronic	2	2	2	2
43.325	Electronic Circuits	3	4	3	4
48.360	Medical Instrumentation	1	2		
78.102	Biomedical Electronics	2	2		
78.103	Biomedical Electronics for Electroneurophysiology Students			3	4
98.102	Physiology for Biomedical Electronics Students	1*	2*	1*	2*
	Library and Research		4		4
		15	20	15	20

Term 4

33.430	Biophysics	1*	2*	1*	2*
41.309	Medical Materials	1	2	1	2
43.433	Digital Computer Systems	4	4	4	4
48.460	Medical Instrumentation	1	2		
76.003	Basic Patient Care	1			
78.104	Electroneurophysiology				2
78.105	Clinical Experience in Biomedical Electronics		7		
78.106	Clinical Experience in Electroneurophysiology				17
78.202	Biomedical Electronics	2	5		
98.202	Physiology for Biomedical Electronics Students	1*	2*	1*	2*
	Library and Research		3		2
		10	25	6	29

* Alternate weeks.

General Prerequisite: Graduation on the Academic-Technical Programme.
Special Prerequisites: *See* page 77.


TYPHOID
DEATHS
1940
1960

Health Division

DEPARTMENT OF ENVIRONMENTAL AND HEALTH ENGINEERING SERVICES

Health Data Technology Programme

(Medical Records)

The application of data-processing methods to the field of health records has resulted in many changes. Now data can be processed in greater depth and more information can be extracted from them. This development has brought about the demand for a technologist trained in the new procedures of health data processing. At the same time, the increasing amount of health data and the practice of manipulating them more fully has produced a demand for more technologists.

To meet these demands, the British Columbia Institute of Technology, in collaboration with the British Columbia Association of Medical Record Librarians and several affiliated hospitals, has designed the Health Data Technology Programme.

Graduates of this programme will be granted a Diploma of Technology and will be eligible to write a national accreditation examination, which is given once a year by the Canadian Association of Medical Record Librarians. Successful candidates will then become Accredited Record Technicians.

Accredited Record Technicians work in the medical record department of a hospital, clinic, or other health agency. They are responsible for preparing, analysing, and preserving the health information required by the hospital or agency, the patient, and the public. In addition, they could be expected to carry out the typing of medical reports.

Graduates will be qualified to seek employment wherever health data are produced or processed. Such places include hospitals, health and welfare agencies, private clinics, and universities. In large hospitals, technologists work under the direction of the Medical Record Librarian. However, in small hospitals, they may be called upon to perform all the functions of the department.

The Health Data Technology Programme provides two years of instruction in the form of lectures, laboratory, and practical experience. In the first year, the student concentrates on the basic health sciences and will become acquainted with a fundamental knowledge of health record science. In the second year, the classroom and laboratory instruction at the Institute will be supplemented by experience in clinical areas and the Medical Record Departments of local hospitals.

A mature personality and a strong sense of responsibility are prerequisites to a successful career in this field. The work involved demands attention to detail and accuracy.

The demand for technologists in this rapidly expanding field exceeds the supply throughout Canada and the United States.


PREMATURE DEATH
BCIT

HEALTH DIVISION

DEPARTMENT OF ENVIRONMENTAL AND HEALTH ENGINEERING SERVICES

HEALTH DATA TECHNOLOGY PROGRAMME

YEAR 1 — *Term 1*

No.	Subject	Hours per Week Lec.	Lab.
31.104	Writing and Contemporary Social Issues	2	1
31.904	Reading Improvement	....	2
32.182	Basic Mathematics (Health)	3	2
76.101	Physiological Chemistry	2	....
80.101	Introduction to Health Record Science	....	6
98.101	Human Anatomy and Physiology	2	2
98.121	Introduction to Behavioural Sciences	....	2
98.141	Basic Medical Microbiology and Epidemiology	2	....
	To be allocated	....	4
	Library and Research	....	5
		11	24

Term 2

14.182	Office Equipment	....	2
31.204	Writing and Contemporary Social Issues	2	1
32.282	Statistics (Health)	3	2
80.102	Medical and Surgical Transcription	....	6
80.201	Health Record Science	....	6
98.201	Human Anatomy and Physiology	2	2
98.221	Introduction to Behavioural Sciences	....	2
98.241	Basic Medical Microbiology and Epidemiology	....	2
	Library and Research	....	5
		7	28

YEAR 2 — *Term 3*

	Data Processing Applications	....	3
80.103	Health Statistics	3	2
80.104	Pathology for Health Data Technologists	....	3
80.105	Clinical Experience for Health Data Technologists	....	14
80.202	Medical and Surgical Transcription	....	4
80.301	Health Record Science	....	3
	Library and Research	....	3
		3	32

Term 4

	Data Processing Applications	....	3
76.104	Pharmacology	....	2
80.203	Health Statistics	....	4
80.204	Pathology for Health Data Technologists	....	3
80.205	Clinical Experience for Health Data Technologists	....	14
80.302	Radiological and Pathological Transcription	....	3
80.401	Health Record Science	....	3
	Library and Research	....	3
		....	35

General Prerequisite: Graduation on the Academic-Technical Programme.
Special Prerequisite: *See* page 77.


JCIT

DEPARTMENT OF MEDICAL LABORATORY SERVICES

Medical Laboratory Programme

The medical laboratory technologist, as a member of the health team, performs the many and varied laboratory procedures, the results of which are used by physicians as important aids to the diagnosis and treatment of the patient.

Laboratory screening programmes are being developed to alert the physician to disease processes which, though not yet clinically evident, are nevertheless present in the patient. Automation, instead of decreasing the need for the medical laboratory technologist, has created a demand for more highly trained technologists. The increasing use of sophisticated laboratory procedures and the rising demand generally for health services assure a wide range of opportunities for employment.

Medical Laboratory Technology offers a variety of scientific pursuits within the modern hospital, the private clinical laboratory, and the research laboratory. These fields include histopathology, clinical chemistry, hæmatology, microbiology, and immuno-hæmatology. The trained technologist may pursue any one or a combination of these fields after completion of training.

Applicants should have a strong interest in science and be meticulous in their work and habits.

There are two avenues of approach for the first year of training, both of which allow entry into second year B.C.I.T.

APPROACH I

Students spend two years at the Institute. Applicants must have graduated on the Academic and Technical Programme or the equivalent with the special prerequisites shown on page 77.

APPROACH II

Some applicants are accepted into the second year of the Institute programme, provided they hold the following prerequisites: Senior Matriculation, or first year University, or first year Community College, or the equivalent, with credits in Mathematics, English, Chemistry, a second science, and one other subject. Applicants accepted may be required to attend a special two-week course at the Institute prior to the start of the academic year. Applicants may obtain further information regarding Approach II from the Registrar's office.

After successful completion of the second year at B.C.I.T., a diploma of technology is granted. The third and final year of training is spent in a hospital laboratory approved by the Canadian Medical Association. At the end of the hospital year the student is eligible to sit the Canadian Society of Laboratory Technologists Examination which leads to the Registered Technologist (the recognized qualification for working as a technologist in a hospital laboratory).

HEALTH DIVISION

DEPARTMENT OF MEDICAL LABORATORY SERVICES

MEDICAL LABORATORY PROGRAMME

YEAR 1 — *Term 1*

No.	Subject	Hours per Week Lec.	Lab.
30.103	General Chemistry for Health Technologists	3	3
31.104	Writing and Contemporary Social Issues	2	1
32.182	Basic Mathematics (Health)	3	2
33.102	Introductory Physics	3	2
70.101	Medical Laboratory Orientation	2	1
98.101	Human Anatomy and Physiology	2	2
98.121	Introduction to Behavioural Sciences	----	2
	Tutorials	----	2
	Library and Research	----	5
		15	20

Term 2

14.050	Introduction to Data Processing	1	1
30.203	General Chemistry for Health Technologists	3	3
31.204	Writing and Contemporary Social Issues	2	1
32.282	Statistics (Health)	3	2
33.202	Introductory Physics	3	2
70.201	Medical Laboratory Orientation	1	2
98.201	Human Anatomy and Physiology	2	2
98.221	Introduction to Behavioural Sciences	----	2
	Library and Research	----	5
		15	20

YEAR 2 — *Term 3*

70.102	Instrumentation in Clinical Chemistry	3	5
70.103	Hæmatology	2	2
70.104	Histology	2	4
70.105	Medical Microbiology and Parasitology	3	6
70.106	Biochemistry and Physiology for Medical Laboratory Technologists	2	----
98.143	Introductory Principles of Immunology	1	----
	Library and Research	----	5
		13	22

Term 4

70.107	Blood Banking	2	6
70.202	Clinical Chemistry	3	6
70.203	Hæmatology	2	3
70.205	Medical Microbiology and Parasitology	3	6
	Library and Research	----	4
		10	25

General Prerequisite: Graduation on the Academic-Technical Programme.
Special Prerequisites: *See* page 77.

DEPARTMENT OF RADIOLOGICAL TECHNICAL SERVICES

Medical Radiography (X-ray) Programme

Medical Radiography has been defined as " the art of recording on a sensitized film an image of the inner structures of the human organism." The chief concerns of the X-ray technician are the taking of X-rays and providing assistance to the radiologist during the various X-ray procedures. Workers in this field must be interested in the welfare of others and possess a strong sense of responsibility.

Advances in science and technology are greatly influencing medical radiography. The course offered is intended to qualify radiographers who will be in step with the latest developments in patient care. Medical radiographers are essential members of the health team.

It is emphasized that this occupation is not considered to present any hazard to health. The dangers of radiation are well recognized and rigidly controlled.

Training includes considerable contact with other students in the Health Technology Programmes. During the first year, general studies chosen and organized with reference to their usefulness to the student as a health technologist are presented. At the same time there are included several courses which relate directly to the study of Medical Radiography. There is a period of orientation spent in the affiliating hospitals.

In the second year, emphasis is placed solely on the subjects related to the specialty. During this time, students gain experience in the clinical application of medical radiography in hospitals affiliated with the Institute. While at the hospital the student is under the supervision of the Institute instructional staff. Considerable laboratory work is a feature of both years.

The Canadian Society of Radiological Technicians requires graduates to complete a further year of clinical experience in a hospital X-ray department, approved by the Canadian Medical Association, to be eligible to sit the society's certification examination. During this year the graduate receives a stipend.

Certification resulting from this programme is recognized and accepted in all Provinces, the United States, Great Britain, Australasia, and many other countries.

Registered technicians may expect to be employed in hospitals and private X-ray clinics. There are also opportunities for men in the sales division of X-ray equipment and film companies.

HEALTH DIVISION

DEPARTMENT OF RADIOLOGICAL TECHNICAL SERVICES

MEDICAL RADIOGRAPHY PROGRAMME

YEAR 1 — *Term 1*

No.	Subject	Hours per Week Lec.	Lab.
31.104	Writing and Contemporary Social Issues	2	1
32.182	Basic Mathematics (Health)	3	2
33.109	Radiological Physics	3	2
72.101	Introduction to Radiography	3	...
72.102	Apparatus and Image Recording	2	2
76.101	Physiological Chemistry	2	....
98.101	Human Anatomy and Physiology	2	2
98.121	Introduction to Behavioural Sciences	....	2
98.141	Basic Medical Microbiology and Epidemiology	2	....
	Library and Research	....	5
		19	16

Term 2

31.204	Writing and Contemporary Social Issues	2	1
32.282	Statistics (Health)	3	2
33.209	Radiological Physics	3	2
72.103	Anatomy and Physiology for Radiographers	3	1
72.104	Orientation in Medical Radiography (Hospital)	....	4
72.201	Basic Medical Radiography	2	3*
72.202	Apparatus and Image Recording	2	3*
76.001	Fundamentals of Patient Care	1	...
98.221	Introduction to Behavioural Sciences	....	2
	Library and Research	....	4
		16	19

YEAR 2 — *Term 3*

72.105	Radiobiology and Protection	1	....
72.106	Clinical Experience in Medical Radiography (Hospital)	....	16
72.301	Medical Radiography	2	3
72.302	Apparatus and Image Recording	2	3
	Tutorial	2	....
	Library and Research	....	6
		7	28

Term 4

72.107	Pathology for Medical Radiographers	2	....
72.205	Radiobiology and Protection	1	....
72.206	Clinical Experience in Medical Radiography (Hospital)	....	20
72.401	Medical Radiography	1	3
72.402	Apparatus and Image Recording	2	3
	Library and Research	....	3
		6	29

* Alternate weeks.

General Prerequisite: Graduation on the Academic-Technical Programme.
Special Prerequisites: *See* page 77.


PICKER

DEPARTMENT OF RADIOLOGICAL TECHNICAL SERVICES

Nuclear Medicine Technology Programme

The advent of the nuclear reactor, with its ability to produce artificial radioactive isotopes in quantity, has made possible a widely increased use of these materials in medical research, diagnosis, and therapy. This field of medicine, relatively unknown a decade ago, is now on the threshhold of major developments. A demand exists for well-educated and properly trained technologists. To meet this demand the British Columbia Institute of Technology offers a two-year course in the techniques associated with nuclear medicine.

Isotopes are the various forms in which a chemical element may occur. They have the same atomic number, but have important physical differences. Some of them are radioactive and emit radiation. This characteristic permits them to be detected and measured by utilizing equipment especially designed for the purpose. They may be introduced into the chemical structure of a large variety of compounds, including biological materials, and investigation of normal and abnormal functions is undertaken by following the isotope through chemical and physical processes in the human body or the laboratory. Radioactive materials are handled in such a way that they constitute no health hazard.

In the first year, the student studies subjects to broaden his general cultural and technological background. These studies prepare him for the specialization to follow. Because of the wide variety of isotope applications and the need for a diversity of capabilities, the programme of studies provides a thorough knowledge of the theoretical principles involved, as well as training in the required skills.

During the second year, special subjects relevant to isotope technology are dealt with. The Institute is equipped with an up-to-date nuclear medicine laboratory. Clinical applications are studied in appropriate facilities in the Lower Mainland hospitals affiliated with the Institute.

On completion of the course, the graduate is granted a Diploma of Technology. Graduates are eligible to sit the certification examination of the Canadian Society of Radiological Technicians in Nuclear Medicine Technology. This certification is recognized in all Provinces. Employment will be found in health institutions and also laboratories connected with medicine, agriculture, fisheries, veterinary, and other biological sciences.

Nuclear medicine technologists should have a liking for work of a technical nature. They must be meticulous in habits and possess a strong sense of responsibility. A desire to be of service to others is essential.

CAUTION
RADIOACTIVE

HEALTH DIVISION

DEPARTMENT OF RADIOLOGICAL TECHNICAL SERVICES

NUCLEAR MEDICINE TECHNOLOGY PROGRAMME

YEAR 1 — *Term 1*

No.	Subject	Hours per Week Lec.	Lab.
14.351	Computer Applications	2	----
30.103	General Chemistry for Health Technologists	3	3
31.104	Writing and Contemporary Social Issues	2	1
32.182	Basic Mathematics (Health)	3	2
33.109	Radiological Physics	3	2
70.101	Medical Laboratory Orientation	2	1
98.101	Human Anatomy and Physiology	2	2
98.121	Introduction to Behavioural Sciences	----	2
98.141	Basic Medical Microbiology and Epidemiology	2	----
	Library and Research	----	3
		19	16

Term 2

30.203	General Chemistry for Health Technologists	3	3
31.204	Writing and Contemporary Social Issues	2	1
32.282	Statistics (Health)	3	2
33.205	Radioactivity	2	----
33.209	Radiological Physics	3	2
70.201	Medical Laboratory Orientation	1	2
74.101	Introduction to Radiation Safety	1	----
76.002	Fundamentals of Patient Care	1	----
98.201	Human Anatomy and Physiology	2	2
98.221	Introduction to Behavioural Sciences	----	2
	Library and Research	----	3
		18	17

YEAR 2 — *Term 3*

33.305	Measurement of Radioactivity	3	----
74.102	Radiobiology and Protection	1	----
74.103	Measurement Techniques in the Nuclear Medicine Laboratory	----	3
74.104	Applied Physiology in Diagnosis and Therapy	3	3
74.105	Clinical Experience in Diagnostic and Therapeutic Procedures	----	15
74.106	Pathology for Nuclear Medicine Technologists	1	----
	Tutorial	----	1
	Library and Research	----	5
		8	27

Term 4

74.202	Radiobiology and Protection	1	----
74.204	Applied Physiology in Diagnosis and Therapy	3	6
74.205	Clinical Experience in Diagnostic and Therapeutic Procedures	----	20
74.206	Pathology for Nuclear Medicine Technologists	1	----
	Library and Research	----	4
		5	30

General Prerequisite: Graduation on the Academic-Technical Programme.

Special Prerequisites: *See* page 77.

Health Division

DEPARTMENT OF PATIENT CARE SERVICES

Nursing Programme

The Nursing Programme offers a student a two-year course of studies and hospital experience which leads to graduation as a qualified nurse and the eligibility to write the professional nursing examinations in order to obtain an R.N. The programme is open to men and women, and neither age nor marital status are primary factors in the selection of candidates. It is preferred that the nursing student has had biology and some chemistry in high school. A physical examination is required prior to entry in the Nursing Programme.

The curriculum for nursing students includes biological, pure, social, and applied sciences. Nursing is taught throughout the two years, and clinical experience, with the guidance of Institute instructors, is provided concurrently at nearby hospitals and health agencies. During the first year, a number of basic subjects are taken with the other Health Technology students. Summer practicums provide additional clinical practice over and above that which is arranged during the four terms.

The nursing courses include study and experience in basic nursing, psychiatric nursing, family care nursing, and medical-surgical nursing. Specific knowledge and skills in areas such as pharmacology, dietetics, and rehabilitation are integrated throughout the curriculum. Modern trends regarding communication and advanced hospital equipment are reflected in the curriculum.

Successful candidates in the Nursing Programme will be well equipped to work as beginning practitioners in hospitals and analogous situations in the community.

FIRST FLOOR

HEALTH DIVISION

DEPARTMENT OF PATIENT CARE SERVICES

NURSING PROGRAMME

YEAR 1 — *Term 1*

No.	Subject	Hours per Week Lec.	Lab.
31.104	Writing and Contemporary Social Issues	2	1
76.101	Physiological Chemistry	3	....
76.102	Introduction to Nursing	3	2
76.103	Introductory Clinical Experience in Nursing	....	8
76.104	Pharmacology	2	....
76.105	Pathology and Pathophysiology	2	....
76.106	Interpersonal Relations in Nursing	1	1
98.101	Human Anatomy and Physiology	2	....
98.121 / 98.122	Introduction to Behavioural Sciences / Human Growth and Development	1	2
	Library and Research	....	4
		16	19

Term 2

31.204	Writing and Contemporary Social Issues	2	1
76.107	Physiology for Nursing	3	....
76.108	Basic Nursing	3	2
76.109	Clinical Experience in Basic Nursing	....	8
76.204	Pharmacology	2	....
76.205	Pathology and Pathophysiology	2	....
76.206	Interpersonal Relations in Nursing	1	1
98.141	Basic Medical Microbiology and Epidemiology	2	....
98.221 / 98.222	Introduction to Behavioural Sciences / Human Growth and Development	1	2
	Library and Research	....	5
		16	19

Summer Term (11 Weeks)

76.110	Medical-Surgical Nursing	6	....
76.111	Clinical Experience in Medical-Surgical Nursing	....	22
76.306	Interpersonal Relations in Nursing	....	2
	Library and Research	....	5
		6	29

YEAR 2 — *Fall Term (12 Weeks)*

76.112	Advanced Nursing—Acute	9	....
76.113	Clinical Experience in Advanced Nursing—Acute	....	18
76.114	Professional Nursing	1	....
76.115 / 76.116	Mental Health Nursing / Clinical Experience in Mental Health Nursing	2	....
	Library and Research	....	5
		12	23

Winter Term (12 Weeks)

76.114	Professional Nursing	1	....
76.115 / 76.116	Mental Health Nursing / Clinical Experience in Mental Health Nursing	2	....
76.117	Advanced Nursing—Long Term	9	....
76.118	Clinical Experience in Advanced Nursing—Long Term	....	18
	Library and Research	....	5
		12	23

Spring Term (12 Weeks)

76.114	Professional Nursing	1	....
76.115 / 76.116	Mental Health Nursing / Clinical Experience in Mental Health Nursing	2	....
76.119	Family Care Nursing	9	....
76.120	Clinical Experience in Family Care Nursing	....	18
	Library and Research	....	5
		12	23

Summer Term (11 Weeks)

76.121	Clinical Experience in Advanced Nursing Problems	....	28
76.122	Advanced Nursing Problems	7	....
		7	28

General Prerequisite: Graduation on the Academic-Technical Programme.
Special Prerequisite: *See* page 77.

Health Division

DEPARTMENT OF ENVIRONMENTAL AND HEALTH ENGINEERING SERVICES

Public Health and Pollution Control Programme

PUBLIC HEALTH INSPECTOR TRAINING

Modern society is presenting problems in increasing number and magnitude which influence the health of the people. Within the broad field of health it is the concern of the public health technologist to measure and control those problems in the community which are associated with environmental hazards.

In the past, inspection and control of infectious disease and the more common environmental hazards were the chief concerns of the public health technologist. Today, with the increasing problems of modern society, the role of the technologist has widened to include diagnosis, education, consultation, and leadership within the community. Now the public health technologist is concerned with diagnosing situations in the community and forecasting their future development; he is concerned with disseminating information and interpreting it, where necessary, to all individuals within the community in order to raise the desire or need for a higher level of public health standards generally; he is concerned with providing leadership and guidance for the community's long-range planning and development.

To meet the changes in this field and the demand for highly skilled technologists, the Public Health and Pollution Control Programme offers a balanced curriculum of lecture, laboratory, and field experience. Students will examine the hazards of pollution of air, land, water, and the many toxic and safety hazards which arise in industrial, agricultural, and urban society. In addition, they will study public accommodation and recreation, community planning, and food processing and control. They will be able to couple their technical skills with human needs and requirements. A large portion of the studies are taken in conjunction with students from a wide range of industrial technologies.

Candidates who wish to enter this programme require a sound basic understanding of mathematics, chemistry, and physics at the university-entrance level. They should be practical, have a common-sense outlook, and be able to communicate with people regardless of race, colour, creed, or social status. They should have the characteristics of tact, integrity, and intelligence. In addition, they should be able to observe and relate their observations.

Employment will be found in the official and private health agencies, in industry, and with specialized agencies interested in pollution control, food sanitation, and public health on a local, national, and international level.

AIR POLLUTION MONITORING

HEALTH DIVISION

DEPARTMENT OF ENVIRONMENTAL AND HEALTH ENGINEERING SERVICES

PUBLIC HEALTH AND POLLUTION CONTROL PROGRAMME

YEAR 1 — *Term 1*

No.	Subject	Hours per Week Lec.	Lab.
30.103	General Chemistry for Health Technologists	3	3
31.101	Writing in a Technical Context	2	1
32.182	Basic Mathematics (Health)	3	2
33.102	Introductory Physics	3	2
82.101	Food Sanitation	3	1
98.101	Human Anatomy and Physiology	2	2
98.142	Microbiology for Public Health and Pollution Control Technologists	3	----
	Tutorial	----	1
	Library and Research	----	4
		19	16

Term 2

18.211	English Speech	----	2
30.203	General Chemistry for Health Technologists	3	3
31.201	Writing in a Technical Context	2	1
32.282	Statistics (Health)	3	2
33.202	Introductory Physics	3	2
82.201	Food Sanitation	2	2
98.201	Human Anatomy and Physiology	2	2
98.242	Microbiology for Public Health and Pollution Control Technologists	3	----
	Library and Research	----	3
		18	17

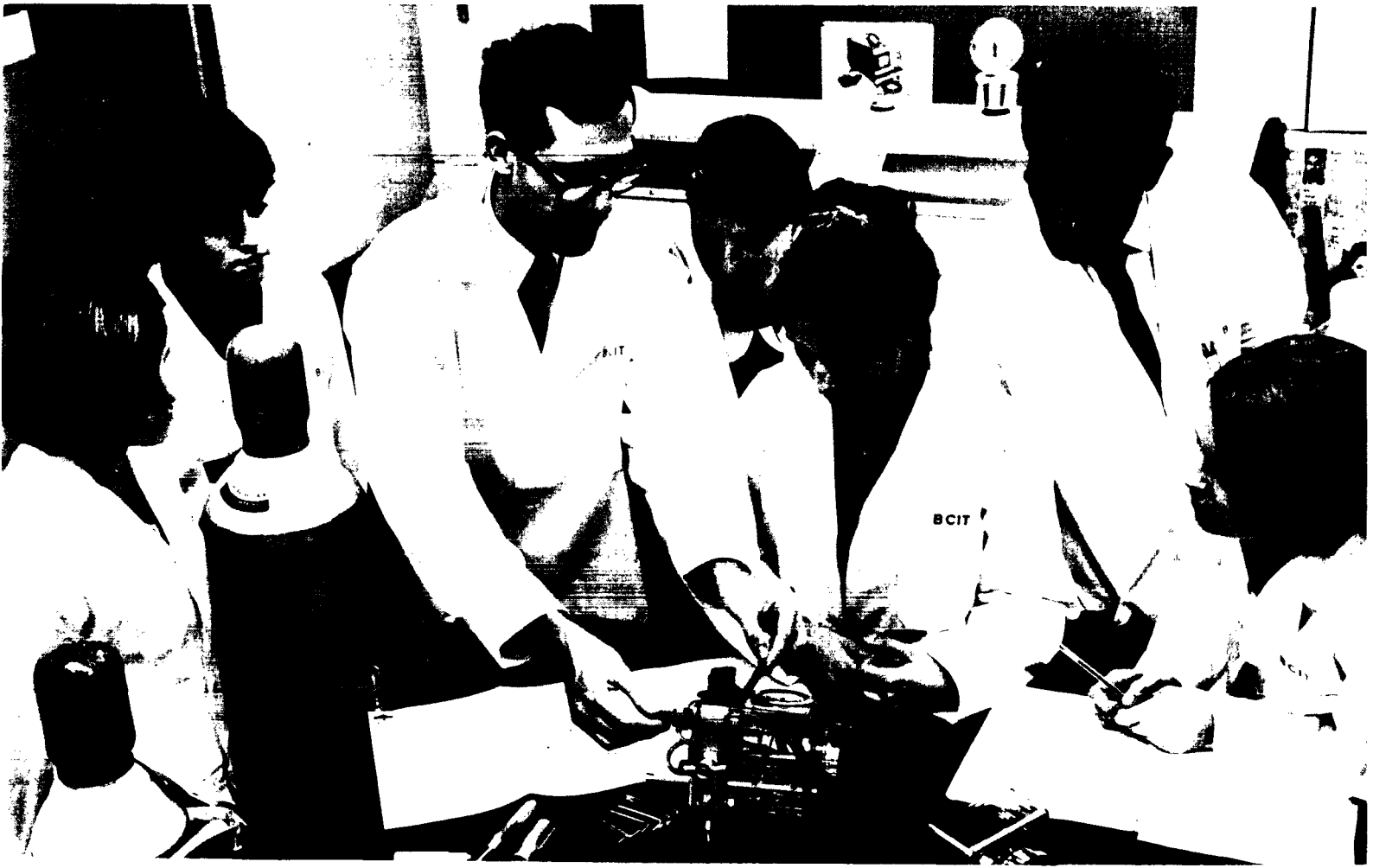
Term 3

10.362	Public Health Law	2	1
22.836	Introduction to Work Study	1	2
31.301	Writing in a Technical Context	1	1
32.382	Computer Applications I	2	----
82.102	Environmental Health and Engineering	8	8
82.103	Public Health Administration	1	1
82.104	Human Relations	2	1
	Library and Research	----	4
		17	18

Term 4

31.401	Writing in a Technical Context	1	1
32.482	Computer Applications II	2	----
82.103	Public Health Administration	1	2
82.105	Communicable Disease Control	3	1
82.202	Environmental Health and Engineering	8	8
82.204	Personnel Administration	2	2
	Library and Research	----	4
		17	18

General Prerequisite: Graduation on the Academic-Technical Programme.
Special Prerequisites: *See* page 77.


BCIT

DEPARTMENT OF ENVIRONMENTAL AND HEALTH ENGINEERING SERVICES

Respiratory Technology Programme

This two-year programme is designed to meet the present and future need for specialist health workers in the related fields of Inhalation Therapy and Pulmonary Function.

Graduates of the Respiratory Technology Programme will be eligible to write the membership examinations of the Canadian Society of Inhalation Therapy Technicians.

The duties of the registered Inhalation Therapy Technician are carried out under the supervision of the medical director of the inhalation therapy department in any hospital in Canada or the United States. These duties may include maintenance of respiratory equipment, the administration of all types of respiratory care treatments to hospital in-patients and out-patients, the control of medical-gas supplies for the hospital, the giving of professional advice on the purchase of equipment, and the performing of a variety of related laboratory procedures, such as pulmonary function testing and blood gas-analysis.

The Inhalation Therapy Technician must be able to work tactfully and sympathetically with a wide variety of patients. Patients receiving respiratory care are freqently acutely ill, and for this reason require constant, skilled attention.

The Respiratory Technology Programme offers training to both men and women. It provides specialist health workers for stimulating and rewarding professional careers.

The training programme consists of a combination of lectures and laboratory work at the Institute and in the local hospitals. The student spends most of his first year of study at the Institute. During the second year, he spends most of his time in the local hospitals.

Inhalation Therapy is one of the new allied health specialties in today's modern hospital. At the present time there is a great demand throughout North America for registered technicians in this field, and there is no indication that this demand will diminish in the years to come.

Persons entering this field should be in good health and have an interest in things mechanical and electrical. In addition, they should wish to contribute their skills to the welfare of other people.


NO SMOKING

HEALTH DIVISION

DEPARTMENT OF ENVIRONMENTAL AND HEALTH ENGINEERING SERVICES

RESPIRATORY TECHNOLOGY PROGRAMME

No.	Subject	Hours per Week Lec.	Lab.
	YEAR 1 *Term 1*		
31.104	Writing and Contemporary Social Issues	2	1
32.182	Basic Mathematics (Health)	3	2
33.102	Introductory Physics	3	2
76.104	Pharmacology	2	1
84.101	Equipment and Maintenance	....	4
98.101	Human Anatomy and Physiology	2	2
98.121	Introduction to Behavioural Sciences	....	2
98.141	Basic Medical Microbiology and Epidemiology	2	....
	Tutorial	....	2
	Library and Research	....	5
		14	21
	Term 2		
31.204	Writing and Contemporary Social Issues	2	1
32.282	Statistics (Health)	3	2
33.202	Introductory Physics	3	2
76.004	Basic Principles of Patient Care	3	....
76.204	Pharmacology	2	....
98.201	Human Anatomy and Physiology	2	2
98.221	Introduction to Behavioural Sciences	....	2
98.241	Basic Medical Microbiology and Epidemiology	....	2
84.201	Equipment and Maintenance	....	4
	Library and Research	....	5
		15	20
	YEAR 2 *Term 3*		
14.351	Computer Applications	2	1
76.101	Physiological Chemistry	3	....
84.102	Clinical Experience in Respiratory Technology	....	23
	Patient Care Tutorial	....	1
	Library and Research	....	5
		5	30
	Term 4		
33.402	Physics of the Respiratory System	2	....
84.202	Clinical Experience in Respiratory Technology	....	25
98.103	Anatomy and Physiology of the Respiratory System	2	1
	Library and Research	....	5
		4	31

General Prerequisite: Graduation on the Academic-Technical Programme.
Special Prerequisites: *See* page 77.

ACKNOWLEDGMENTS

Grateful acknowledgment is made to the following persons and organizations for photographs used in this publication:

George Allen Aerial Photos Ltd.

British Columbia Hydro and Power Authority.

British Columbia Department of Highways.

Craigmont Mines Ltd.

Division of Technical and Vocational Curriculum, Technical Branch, Department of Education.

Greater Vancouver Water Board.

Visual Education Department, Vancouver School Board.

SUBJECT SUMMARIES

SUBJECT NUMBERING SYSTEM

Subjects are numbered to indicate the technology or department under which instruction is given, the term, and the subject material. The first two figures indicate the parent technology or department, the third figure indicates the term in which a subject is normally taught, the last two figures indicate the subject description. In the example 31.201, the "31" shows that the subject is offered by the English Department, the "2" shows that the subject is normally taught in the second term, the "01" stands for the subject description. The departments and technologies with their corresponding numbers are as follows:

10—Administrative Management.
12—Broadcast Communications.
14—Computer Programming and Systems.
16—Financial Management.
18—Hotel, Motel, and Food Service Management.
20—Marketing Management.
22—Technical Management.
30—Chemistry.
31—English.
32—Mathematics.
33—Physics.
40—Building.
41—Chemical and Metallurgical.
42—Civil and Structural.
43—Electrical and Electronics.
44—Biological Sciences.
45—Forestry.
46—Forest Products.
47—Natural Gas and Petroleum.
48—Instrumentation and Systems.
49—Mechanical.
50—Mining.
51—Surveying.
70—Medical Laboratory.
72—Medical Radiography.
74—Nuclear Medicine.
76—Nursing.
78—Biomedical Electronics.
80—Health Data.
82—Public Health and Pollution Control.
84—Respiratory.
98—Basic Health Sciences.

ADMINISTRATIVE MANAGEMENT

10.131 Management in Industry

An orientation in the nature of business in the private enterprise system, embracing forms of business ownership and organization, management, leadership, and business elements of production.

10.135, 10.235 Economics

A 1-year two-term approach to economics, with the aim of furthering an understanding of the organization and operation of our economic environment. The organization for production and distribution of wealth, determinants of prices and costs, and of income and employment, money and banking, the role of government in business and international trade; analysis of supply and demand, national accounts and business cycles; fixed, variable, and marginal costs; and analysis of the business firm under varying conditions.

10.221 Psychology

An introduction to the factors affecting human behaviour, with special emphasis on those aspects of behaviour of most importance to the administrator.

10.231 *See* 10.131.

10.232 Administrative Practices

A study to give the student an introductory insight into the basic nature of business problems and into the administrative processes involved in handling them. Problems in all of the several business areas will be examined, with emphasis on the personnel management aspects of these fields. Study and discussion will be undertaken of actual business situations selected to illustrate typical problems met in industry requiring managerial analysis, decision, and action.

10.235 *See* 10.135.

10.245, 10.345, 10.445 Managerial Economics

The study of the application of the analytical tools of economics to practical business problems in production inventory, sales, and investment planning.

10.260 Basic Law for Broadcast Communications

An examination of the legal system with special reference to contemporary problems followed by an in depth study of defamation as an example of substantive law.

10.307 Mathematics for Economics and Statistics

Calculus, with emphasis on its practical use as an extension of other branches of mathematics in business and technical problems. Basic concepts, derivatives with applications, maximum-minimum problems and optimization, differentials, integrals with applications, partial derivatives, curve-fitting with applications in statistics, series, differential equations.

10.308 Mathematical Statistics and Probability

A study of the theoretical underpinnings of modern statistics. Topics include probability theory, central limit theorem, sampling, hypothesis testing, regression, correlation.

10.317, 10.417 Hospitality Industry Law

A summary of Canadian law applicable to the hospitality industry; the sources of law; constitutional law; the legislative, executive, and judicial functions.

The common law of contract, tort, bailment, employment, and agency; property (real and personal); partnerships and corporations. Statutory enactments dealing with sale of goods, human rights, methods of securing debts, working conditions, crime, labour relations, liquor, health, and licensing.

(More or less emphasis will be given to the above topics depending on the option chosen.)

10.321 Psychology

The application of factors affecting human behaviour to the attainment of institutional goals.

10.325 Industrial Relations

An introductory analysis of the fundamental issues and facts of labour-management relations. Special emphasis is given to collective agreement content and interpretation, bargaining, and basic labour economics.

10.332, 10.432 Estate Management

The real-estate function—land law, estates, and interests in land and the personal and business management decision process. The economic characteristics of urban real estate and the market; city growth and development—locational factors in influencing the determination of land use and ownership. Building construction and property development; institutional lenders and the mortgage market. Practical aspects of the syllabus will include studies of the functions of the real-estate agent, salesman, and appraiser.

10.333 Industrial Processes

A special course designed to familiarize students with the principal extractive, process, manufacturing, and service industries of British Columbia. Major emphasis on the marketing, production, and financial aspects of these industries with strong back-up in films and guest lecturers.

10.345 *See* 10.245.

10.360, 10.460 Business Law

A study of legal rules and principles which guide decisions involving the law of contracts, including the sale of goods and negotiable instruments, as well as the business associations of agency, partnership, and companies.

10.362 Public Health Law

An examination of the legal system which serves our society, followed by a detailed look at certain areas of substantive law which the public health technologist is likely to come in contact with in carrying out his duties. Special attention will be given to selected public health legislation.

10.417 *See* 10.317.

10.425 Industrial Relations

A detailed analysis of selected labour-management problem areas with emphasis on the solution of practical existing problems in industrial relations.

10.427 Manpower Selection and Placement

This subject provides the student with a capability in dealing with problems of selecting and placing individuals both within business enterprises as well as in industry generally. The subject will cover such items as counselling, testing, interview techniques, and various other assessment methods.

10.432 *See* 90.332.

10.434 Managerial Policy

An analysis of business policy formulation designed to give the student practice, experience, and confidence in handling business situations, including those of a complex nature where basic policy decisions are necessary to assist in problem-solving. Typical business cases will be selected from the fields of finance and control, personnel, production, marketing, and general management for study and discussion. Determination of an acceptable course of action will be followed by the development of a proposed scheme of implementation.

10.445 *See* 10.245.

10.451 Forecasting

The application and limitation of statistical, econometric, and other quantitative techniques to forecasting problems. The sources, availability, usefulness, and limitations of data will also be examined.

10.460 *See* 10.360.

10.465 Society and Government

The study of the structure of Canadian society and Government, examining the processes, problems, and issues which exist.

10.730 Business (for Engineering and Process Technologies)

Designed to give students of the Engineering and Process Technologies an understanding of business management and an opportunity to apply principles and techniques through analysis of business case-problems.

BROADCAST COMMUNICATIONS

12.101, 12.201 Introduction to Radio

An introduction for Broadcast Communications students to the equipment used in radio broadcasting, and to the techniques used in the various processes and procedures in the operation of radio broadcasting stations. Starting with details of the actual make-up of the station, the student continues with a study of microphones, turntables, radio control boards, reel-to-reel and cartridge tape machines, tape editing, and all control-room accessories, and develops in laboratory sessions the manual dexterities needed for the skilled handling of all this equipment. The subject leads to the second-year elective, " Radio Production," 12.311, 12.411.

12.102, 12.202 Introduction to Television

This subject introduces the student in Broadcast Communications to the study of the processes of television-picture transmission, and to the use of the highly sophisticated equipment used in this field of broadcast television. Various types of cameras are studied, lighting and lighting equipment, picture

and waveform monitors, applied optics, film and slide projectors and their telecine chains, video switchers and video distribution, video-tape recording, studio practices, and an introduction to colour television. The subject is taught in a basically non-electronic course, where the emphasis is on the uses and limitations of the various pieces of equipment as tools, rather than electronically sophisticated machines. The subject leads to the second-year elective, "Television Production," 12.312, 12.412.

12.103, 12.203 Introduction to News

The student in this course will be given his first look at the world of "electronic journalism." The course covers a history of news; newsroom organization and operations in radio and television; news writing and editing, news sources and coverage; production of news broadcasts and special-interest features. Introduction to News is preparatory to "News—Radio and Television," 12.313, 12.413, one of the electives in terms 3 and 4. In this elective, the fundamentals are expanded, and students spend considerable time actually working in an operating newsroom within the technology.

12.104, 12.204 Introduction to E.T.V.

An introduction for students of broadcasting to the specialized equipment and techniques developed for the use of mass media in the classrooms of today's educational institutions. The basic objective is the introduction of the differences that exist between the use of radio and television techniques in both education and commerce. The student also receives an appreciation of the co-ordination necessary between the educator and the broadcaster. The subject is designed to give an introduction to the uses of the media from the single classroom to the large distribution system.

12.105, 12.205 Industrial Organization

This first-year subject serves as an introduction and background study in several areas connected with radio and television broadcasting. A study is made of the legislation and regulations under which broadcasting in Canada is governed. A first-term study is also made of the history of the development of broadcasting in this country, from the first steps in radio through to present-day radio and television broadcasting. The student is introduced to the use of music in broadcasting and elementary work in the development of programming. The subject includes work in pronunciation and diction, the use of stress, phrasing and projection as applied to work in the industry.

12.106, 12.206, 12.306, 12.406 History and Current Events

It is essential for persons in the broadcast industry to have as wide a base of external knowledge as is humanly possible. This course, designed on a partial seminar basis, combining lectures and practical exercises, will deal with present-day happenings on the local, regional, national, and international level. Where possible, the practical happenings of today will be directly related to their historical background.

The study continues throughout the two-year study of Broadcast Communications.

12.201 *See* 12.101.

12.202 *See* 12.102.

12.203 *See* 12.103.

12.204 *See* 12.104.

12.205 *See* 12.105.

12.206 *See* 12.106.

12.306 *See* 12.106.

12.311, 12.411 Radio Production

This is one of the three electives available to second-year students. They engage in practical work in radio production; the preparation and presentation of programmes, news broadcasts, remote broadcasts, and special-events coverage, in all phases of production from planning through to the finished product. The student gains practical experience in the use of all studio equipment, as well as remote pick-up equipment and portable recording facilities.

12.312, 12.412 Television Production

The second of the electives is available in terms 3 and 4. Students engage in the production of television broadcasts, making use of full studio facilities in the production of television commercials, special-events coverage, the taking and editing of film material, and carrying out on-the-job training projects. The laboratories of the Broadcast Communications Programme consist of a fully operative television station, equipped with all standard apparatus used in the industry, including video tape recorders, full darkroom facilities, sound-on-film as well as silent motion-picture cameras, and five television cameras, including a colour camera chain, and colour monitors.

12.313, 12.413 News—Radio and Television

The third elective is available to second-year students in Broadcast Communications. News follows the first-year Introduction to News, in which fundamentals are expanded to give professional atmosphere to the training of neophyte "electronic journalists." The students will spend much time refining techniques and actually covering and editing the news. As in the first year, much time will be spent in studying current events as a background to the news as it is happening.

12.412 *See* 12.311.

12.412 *See* 12.312.

12.413 *See* 12.313.

COMPUTER PROGRAMMING AND SYSTEMS

14.050 Introduction to Data Processing

Training in basic data-processing principles to develop recognition of the possible application of these principles in industry. The principal functions of data processing will be illustrated and practised with unit record equipment. Elementary computer programmes will be written and tested on the 1620 computer. Use of flow-charting and elementary data-processing systems design will illustrate the achieving of data-processing objectives.

14.052 Data Processing Applications

A study of the application of data-processing principles to accounting and statistical functions, including accounts receivable, billing sales analysis, inventory control, accounts payable, and payroll.

14.053 Business Computer Programming

An introduction to problem-oriented computer programming using Cobol programming language. Standard accounting applications will be flow-charted, programmed, and tested by the student on an I.B.M. System /360 computer.

14.160 Introduction to Computer Programming

An introduction to the principles of programming using the I.B.M. 1620 computer. Emphasis is on the understanding of the mode of operation of a programme through the media of machine language and assembler language, on the acquirement of " hands on " experience, and practice in the flow-charting, coding, debugging, and documenting of simple business applications.

14.170 Unit Record Data Processing

A brief introduction to unit record equipment and its use. Elementary wiring and systems design will be included.

14.182 Office Equipment

An introduction to the capabilities of the commonly used machines—adding and calculating machines, cash registers, copiers and duplicating equipment, microfilming, dictating equipment, etc. Operating skill with the adding and calculating machines only is included.

14.260 Principles of Computer Programming

A detailed study of the fundamental principles and techniques common to the programming of electronic computers. The student will programme numerous business problems using an I.B.M./360 computer. Included will be basic assembler language, flow-charting, file updating, indexing, table look-up, sub-routines. The student will be expected to analyse problems, organize solutions, design the report output, then code, assemble, test, debug, and document his programme according to acceptable standards and control.

14.270 Computer Systems I

Introduction to computer systems design and basic systems analysis techniques. Emphasis is on punched-card computer applications to payroll, billing, and other accounting and statistical functions. Techniques of systems flow-charting, forms design, and card design will be practised.

14.296 Office Systems and Procedures

An introduction to manual, one-write, keysort, and machine systems covering such applications as billing, sales analysis, accounts receivable, accounts payable and expense distribution, inventory, payroll distribution, and payroll writing. A practice set in one-write form is to be completed by all students. The course also provides a brief introduction to the interrelationships of the basic functions such as purchasing, receiving, stock-keeping, production, selling, disbursing.

14.305 Calculus with Business and Technical Applications

Differentiation, applications in technical problems, use of derivatives in optimization, methods of integration, use of tables of integrals, numerical integration using computers, partial derivatives, curve fitting, and applications in statistical problems.

14.306 Probability and Simulation

Probability rules, expectation, repeated trials, Bayes' Theorem with applications; probability distribution, Poisson distribution, and queueing theory; simulation; probability and Monte Carlo simulation, with Fortran applications.

14.351 Computer Applications

Applications of the computer in engineering and medical technologies; how a computer works, recognizing problems suitable for computer solution, flow-charting and communicating with computer personnel; emphasis is on the use of computers to solve problems related to the technology concerned. Where available, "package" programmes will be demonstrated and used by students.

14.360 IBM S/360 Assembler Programming

Continuation of 14.250. A detailed study of computer programming capabilities, using the full instruction set of the System/360 Assembler language, establishing detailed programming, label, flow-chart, report layout, and documentation standards; introduction to input/output control system and to the operating system. The student will write numerous programmes employing card, printer, tape, and disk files. System/360 Macro language.

14.370 Computer Systems II

Introduction to the principles and techniques of systems analysis: gathering data, systems design, flow charting, documentation, procedures, card and form design, controls, audit trails. The use of a high-level language (PL/I) in solving business and statistical problems involving internal sorting, table look-up and binary search. Case study: design of a total information system, using magnetic tape devices.

14.407 Engineering Application Programmes

Familiarization with packaged programmes available for standard engineering applications such as COGO, STRESS, general-purpose systems, simulator, mathematical programming system, etc.

14.409 Operations Research Techniques

Linear programming theory, problem formulation, analysis of results, sensitivity analysis, practical applications and limitations; linear programming, simulation, and dynamic programming; choosing the approprate technique. Inventory models; CPM and PERT, uses and limitations.

14.460 Advanced Programming (Assembler and PL/I)

Continuation of 14.350. Disk and tape programming for sequential, index sequential and direct file organization, as well as advanced and efficient coding techniques in both PL/I and assembler language. Considerable time will be devoted to a rigorous study of the job-control statements, sort and utility programmes. Students will complete numerous programmes, including, as a term project, a comprehensive set of programmes of approximately 3,000 instructions, employing the full resources of the on-site IBM System/360 computer.

14.470 Computer Systems III

Methods used in the development of business data processing systems for punched cards, disk storage, and magnetic tape. System specification; equip-

ment appraisal, acquisition, and utilization; implementation and control. These techniques will be applied to the solution of advanced management problems. Compiler language: Cobol will be included in this course.

14.480 Operating Systems Programming

A thorough study of the IBM S/360. Disk operating system will be undertaken to permit the student to perform the Operating Systems Programmers tasks of: (*a*) implementing the computer manufacturer's operating systems, utilities, and programming languages; (*b*) developing standard programming routines and procedures; and (*c*) providing technical advice and assistance to application programmers and operations staff. Students will be able to perform systems generation and maintenance.

FINANCIAL MANAGEMENT

16.140, 16.240 Accounting

The principles and techniques of a complete accounting cycle covering assets, liabilities, and owners' equity; basic accounting procedures; changes in owners' equity; closing the books; adjustments for accrued revenue, accrued expense, and for revenue and cost apportionments. The construction of working papers and financial statements including merchandise operations. Accounting for proprietorships, partnerships, and limited companies. Procedures and principles applicable to cash, investments, receivables, inventory, fixed assets, and liabilities. Accounting for manufacturing operations and basic cost accounting techniques. The analysis of financial data for management including sources and uses of working capital, cash flow statements and cash forecasting, and departmental and branch operations. Accounting aids to management, budgeting and profit planning. Consolidated statements. Canadian income tax. All students are required to complete a practice set during the second term.

16.145 Credit and Collections

Study of various types of credit and their use by retail businesses, commercial enterprises, and consumers. Includes sources of information, credit policy and control, and collection techniques.

16.240 *See* 16.140.

16.245 *See* 16.145.

16.341, 16.441 Cost and Managerial Accounting

The accountant's role in the organization; major purposes of cost accounting; cost-volume-profit analysis; job order costing; process costing; standard costs; budgeting, responsibility accounting; direct costing; capital budgeting; joint and by-product costs; non-manufacturing costs; inventory; accounting systems; payroll.

16.342, 16.442 Retail Merchandise Accounting

Departmental, branch, and agency accounting systems. Consumer credit, instalment sales and consignment sales procedures. A comprehensive study of the solution of the mathematical problems of retail merchandising; i.e., profit calculation, mark-up, retail prices, price policies and lines, markdowns, inventory, expenses, and budgeting. The role of accounting in retail merchandise management.

16.343 Cost Accounting

Direct costing and the contribution approach; cost-volume-profit analysis; cost analysis for managerial planning and decisions; process job-order, joint, and by-product costing; inventory planning, control, and valuation; budgeting and profit planning; standard costs; cost and price variance analysis; capital budgeting.

16.346, 16.446 Auditing

Basic auditing procedures. Features of the internal control system. The audit programme. Statutory audits, government audits, internal audits. The audit routine as applied to cash, inventory, accounts receivable and sales, fixed and other assets, accounts payable and purchases, income and other taxes and expenses. Specialized audit routines.

16.347, 16.447 Financial Accounting

Review of accounting procedures, the accounting cycle, and the preparation of financial statements. Net income concepts, capital stock, surplus and dividends, accounting principles, cash, receivables, inventories, investments, fixed assets, liabilities and reserves, analysis of working capital, application of funds. Statement from incomplete records, reorganization schemes, price level impact on financial statements.

16.361, 16.461 Finance

An investigation of different methods of raising funds for new and existing businesses, corporate and non-corporate. Business risk and uncertainty. Analysis of the importance of financial institutions. Business promotion. Security analysis. Capital budgeting. Decision-making analysis. Surplus, dividend, and reserve policy. Business failure.

16.365, 16.465 Money and Banking

The study of money and money substitutes, the supply of currency, the creation of credit; the functions and uses of money; practices, policies, functions, and services of commercial banks; central banking and monetary control; the objectives and techniques of monetary policy and debt management; a study of financial assets and financial markets; money and the international economy.

16.366, 16.466 Security Analysis

Techniques and principles of security analysis; valuation of securities; analysis of risks inherent in all types of security investments. Emphasis will be placed on: the investment setting, the securities market, financial statement analysis, investment timing, and portfolio analysis of both individual investors and institutional investors.

16.368, 16.468 Insurance

A survey course of all aspects of insurance, including life, fire, accident, and general insurance, coverage and risk. Principles of indemnity. Review of basic actuarial techniques. Agency operations. Investment policy.

16.441 *See* 16.341.

16.442 *See* 16.342.

16.443 Management Accounting

The management accountant's role; income determination; decision-making; profit planning; budget; forecasting; profit margin variance analysis; corporate financial analysis; income tax; internal control; annual report; accounting aids for sales and production management; measuring managerial performance; direct costing and the contribution approach.

16.446 *See* 16.346.

16.447 *See* 16.347.

16.461 *See* 16.361.

16.465 *See* 16.365.

16.466 *See* 16.366.

HOTEL, MOTEL, AND FOOD SERVICE MANAGEMENT

18.101 Front Office Management

Front office organization and psychology. Materials, equipment, and supplies used; rooms salesmanship; reservations, registrations, and front office "accounting" for various-size hotels; handling of cash and credit transactions; the night hand-transcript, and the processing of accounts and the night audit on billing-audit equipment; telephone switchboard.

18.102, 18.202 Food and Beverage Management

Background of industry; hygiene and sanitation; meal planning, menu preparation, basic production systems. Identification, sources and selection of foods; purchasing principles and methods; basic food preparation; culinary terminology; food science. Elementary kitchen layout, equipment specification; maintenance, cost of repairs. Service of food in dining-rooms, snack bars, banquet rooms, lounges. Kitchen and service areas labour cost control; food costing and production control. Menu writing and preparation. Organization of catering department; personnel requirements and administration. Wines, dining-room equipment purchase and storage; introduction to convenience foods and new media of food preparation and service.

18.202 *See* 18.102.

18.203 Bar and Rooms Management

Housekeeping organization and duties; control forms used; supplies and equipment used; specifications for purchasing equipment and linen; laundry operations; beer-parlour organization and control; cocktail-lounge organization, glassware, types of beverages, dispensing devices, and control systems.

18.211 English—Speech

Speech construction; types of speeches; speaking before groups; introducing and thanking speakers, chairing meetings, and interviewing; practice in preparation and delivery of talks to groups.

18.302, 18.402 Food and Beverage Management

Advanced food preparation; volume feeding management, menu pricing; kitchen and dining-room interrelation in production and service planning; pre-cost and pre-control, budgeting, standardization, analysis; function and banquet catering, including menu, production, layout, service requirements; special service catering; food processing and production by manufacturers; nutrition, dietetics; equipment purchasing specifications; design and market research; future trends. Organization of a catering department; duties, staffing, work scheduling, responsibilities; function booking; staff training, financial and personnel policies. Steward's department, storage control; china, silverware, glassware, table-linen purchase; specialized food service for hospitals, colleges, institutions, air lines. Environment and atmosphere;

management and consultant concept for design and layout; science of food and nutrition for "tomorrow's" operation. Laboratory hours will be devoted to food preparation and dining-room service, as well as design of layout, research on equipment, observation of operations, and analysis of local establishments.

18.305, 18.405 Food Research and Production

Research in food preparation to balance quality preparation with cost of production; testing of new products to evaluate the possibility of their uses in a practical production situation; menu planning; development of certain manipulative skills to permit students to be in a position to eventually train and supervise others; use of equipment, with particular reference to comparison of engineering features with cost.

18.313 Food and Beverage Control

Food and beverage purchasing, receiving, storing, production, and sales controls; payroll (labour costing) control techniques; interpretation of food and beverage profit and loss statements.

18.316, 18.416 Human Relations

Thought and leadership; fundamental principles of human relations; development leading to an understanding of a "belief" relationship. Job analysis, recruiting, interviewing, indoctrinating, training, supervising, managing. Co-ordination of hospitality activities with community—social, charitable, sports, chamber of commerce, organization affiliations; cooperating with convention bureaux, travel bureaux, and tourists. Management-labour relations.

18.318 Front Office Accounting

Review of front office guest accounts, using both manual and machine systems; preparation of the night transcript for smaller hotels and motels; completion of night audit for large hotels, using equipment such as the "NCR 42." This course will involve as much practical use of the equipment as is possible.

18.321 Food Marketing

Examination of the basic elements of the marketing concept and how they can be combined and used in a planned marketing programme; characteristics of various marketing tools available to the caterer, including market research, print advertising, broadcast media advertising, personal-contact selling, direct mail, publicity and public relations; methods of determining, by means of market research, the eating-away-from-home habits of the public; students will conduct their own field survey.

18.402 *See* 18.302.

18.405 *See* 18.305.

18.413 Hotel Accounting

Rooms sales control; cash reports; control of accounts receivable; interpretation and analysis of hotel balance-sheets and profit and loss statements; budgeting and forecasting; feasibility studies; financing and cash flow; valuation; insurance; income tax.

18.416 *See* 18.316.

18.419 French Conversation

A basic, or an advanced, course (depending on the ability of the student) to give some fluency in French conversation. The course will be oriented toward the terms used in the hotel and food business, and will include correspondence. A language laboratory is available to complement classroom instruction.

18.420 Food and Beverage Accounting

Interpretation and analysis of balance sheets and profit and loss statements for food service operations; budgeting; leasing; franchising; financing; insurance; income tax.

18.422 Menu Planning

Contemporary menu writing; basic menu-drafting requirements; relationship of menu layout to food cost, labour cost, and profit; menu language and interpretation; recipes and menus in food production; influence of efficiency foods on menus; types of menus used in the catering industry; menu cover design; calculation of menu sales prices.

18.424 Food Facilities Design

Planning of production and service areas; construction standards; economics of motion in layout; interior sound and light control; air conditioning; power and heating systems; design and traffic flow; mechanization and transportation of supplies in a production area; furnishing and equipment design; environment and interior decor.

MARKETING MANAGEMENT

20.090 Marketing (for Computer)

A marketing course designed for Computer Programming and Systems Programme students covering the essential areas of the two-term marketing course in one term. *See* 20.180, 20.280.

20.180, 20.280 Marketing

An introduction to the marketing environment and marketing institutions; detailed study of the basic marketing functions, marketing research, product planning, selection of trade channels, merchandising, advertising and sales promotion, salesmanship. Emphasis on marketing of industrial as well as consumer goods.

20.190, 20.290, 20.390, 20.490 Writing and Sales

Students require a knowledge of modern advertising methods as well as an understanding of the special techniques of writing for the broadcast media. Lectures and workshop sessions give the student a thorough indoctrination in advertising as used in today's marketing plans. Commercials are studied in all aspects, and the problems facing commercial writers in advertising agencies, stations, and retail organizations, as well as in the advertising departments of manufacturers, are compared, studied, and practised. Those with aptitude or talent for writing receive the groundwork for careers in this field.

20.230 Introduction to Physical Distribution

This course is primarily designed for those beginning traffic, transportation, and logistic studies. The course introduces the student to the language of physical distribution, giving him an insight and understanding of our complex distribution system.

20.275 Salesmanship

Introduction to professional selling. Emphasis on practical problems of locating and qualifying prospects, use of the depth approach, and improving sales preparation and organization. Some examination also given to improving interpersonal communications in non-selling situations.

20.280 *See* 20.180.

20.290 *See* 20.190.

20.310 Retailing

This course is designed to provide the student with an understanding of the retailers' role in the distribution process, its competitive environment, the methods of determining the potentials of a trading area, the techniques of determining customer demand, store image, the organization, and "four walls" operation of a retail establishment.

20.320 Wholesaling

Examination of the place of wholesaling in over-all marketing picture; to assess the importance of the various forms of wholesaling. An integrated management approach to the operations of a wholesale business is used.

20.321 Exports and Imports

A study of the mechanics of international trade; foreign exchange rates; balance of international payments; tariff duties on imports, import quotas; and European Common Market characteristics. Product-distribution-promotion mix for export markets of Canadian industry with emphasis on U.S.A. market influences. The economic, cultural, and political considerations involved in adapting fundamental domestic marketing techniques to foreign conditions.

20.322 Market Planning

This advanced course in marketing is designed to augment the work done in the introductory marketing course. Students will study intensively the marketing concept and the role of marketing management, the dynamic aspects of the Canadian markets, the problems and analytical processes of product planning and development. Extensive use is made of case studies and assignments to simulate business conditions as closely as possible.

20.331 Modes of Transportation

A study of the various ways of moving commodities, including services offered by air, highway, pipe-line, rail and water carriers (private and public), and the problems encountered by carriers, shippers, and consignees.

20.332, 20.432 Transportation Economics

An analysis of the economic principles of transportation including transport policies, prices and rate structures, costs, intermodal competition, and planning for effective utilization and allocation of transport resources for public service, yet obtaining a fair return on investment.

20.371, 20.471 Advertising and Sales Promotion

Introduction to advertising and sales promotion. Psychology of advertising, preparation of copy, layout, media selection, strategy, and campaign planning. Organization for sales promotion.

20.372 Consumer Behaviour

An examination of consumer purchase decisions. Special emphasis will be placed on areas such as motivation and arousal, perception, attitude and attitude change, and consumer decision processes.

20.381 Human Relations

Study of the human elements in the operation of all enterprise; the nature of individual behaviour, interaction between individuals and organizations, group dynamics, and leadership.

20.382, 20.482 Marketing Research

The purpose of this course is to teach the student to make the most effective use of marketing research in business. The course first examines the principal areas in marketing where research can be most useful. Detailed analysis is then made of the steps involved in a research programme. The various research organizations and agencies in Canada are surveyed in relation to the types and kinds of work they do. Students will be required to carry out a research project as a practical exercise.

20.390 *See* 20.190.

20.391, 20.491 Advertising and Promotion

This course is specifically designed for the Hotel, Motel, and Food Service Management Programme.

Analysis of market in order to establish a sales-promotion programme which will contribute to a more profitable operation. Advertising as part of that total programme—the selection and use of the various media available; the techniques and costs involved. The part played by public relations and publicity; the channels available, the techniques and costs; the use of outside personnel, such as advertising agencies and public relations consultants; the organization, duties, and methods of the sales department.

20.411 Merchandising

This course is a natural continuation of Retailing. In it the student is introduced to the considerations relating to the establishment, procurement, maintenance, periodic appraisal, and promotion of the merchandise assortment. Subjects covered are: selection of merchandise policies, determination of the assortment mix, types of assortments, national versus private brands, imports, planning, budgets, standards, criteria governing choice of resources, selection techniques, buying negotiations, order and reorder formulæ, types of buying, buying organizations, pricing, vendor relations, vendor selling aids and services, assortment presentation, advertising, and sales promotion.

20.423 Sales Management

General principles of sales management. Emphasis is given to the human resource, with stress placed on selection, assimilation, training, and supervision; also examination of sales research, planning, organization, and analysis is made. The course finishes with a discussion of sales management ethics.

20.432 *See* 20.332.

20.433 Customs and Documentation

A comprehensive coverage of the procedures, rules, and regulations necessary for the movement of goods, both domestic and foreign. A study of information systems and techniques for forwarding freight. Emphasis will be placed on international traffic, the export/import of commodities.

20.434 Regulatory Systems in Canadian Transportation

The evolution and foundation of governmental regulatory agencies—Canadian Transport Commission, provincial and municipal legislation and controls. An analysis of common and statutory law; duties and liabilities of carriers will be included.

20.435 Distribution Centres and Control

This course will cover storage and warehousing and will include diverse matters, such as inventory control, palletization, unitization, containerization, packaging, and general materials handling.

20.436 Transportation Trends

From here to ——, pipe-lines under the ocean, robot trains, automated terminals, conveyors under the city, SSTs on the horizon, ice-free waterways, hydroplanes and hydrofoils, etc.—an analysis of what's going on now in transportation and what is likely to occur.

20.437 Marketing Research for Transportation

The purposes of the course are to provide the student with an understanding of the role of marketing research in Canadian business and a knowledge of the procedures and applications of marketing research within the context of the business firm. Case studies and problems will be used to incorporate the practical aspects. The student will be required to draw up a research proposal as a practical exercise in the course.

20.471 *See* 20.371.

20.481 Transportation

An introductory study of modern means of transportation in all fields of business activity.

20.482 *See* 20.382.

20.483 Personnel Administration

An introduction to the fundamentals of personnel management, including personnel procedures, tools and records, job descriptions, recruiting, interviewing, testing, selection, orientation, training, wage and salary administration, promotion and transfers, benefits, and morale.

20.484 Transportation and Materials Handling

The field of transportation, storage, and materials handling is an integral part of the distribution system. This course will investigate the Canadian transportation systems, warehousing and other storage, and the materials-handling techniques associated with transportation and storage in our complex distribution system.

20.490 *See* 20.190.

20.491 *See* 20.391.

20.700 Agricultural Products Marketing

An introduction to the marketing environment and marketing institutions in the agricultural products industry; study of the basic marketing functions, marketing research, product planning, selection of trade channels, merchandising, advertising and sales promotion. Case studies and readings are used to relate the theoretical aspects of marketing to the practical problems of marketing agricultural products.

20.701 Wood Product Marketing

An introduction to the marketing environment and marketing institutions in the wood products industry. Study of the basic marketing functions: marketing research, product planning, selection of trade channels, merchandising, advertising and sales promotion. Case studies and readings used to relate the theoretical aspects of marketing to the practical problems of the wood products industry.

TECHNICAL MANAGEMENT

22.012, 22.022 Statistics in Broadcasting

The use of statistical analysis. Frequency distributions, graphical presentations. Measures of central tendency. Probability, probability distributions. Sampling. Hypothesis testing. Chi-square test. Correlation. Linear regression analysis. Time series analysis. All techniques will be referenced to marketing, market research problems and radio and TV. measurement techniques. Strong emphasis will be placed on the use of statistics in associated projects.

22.013 Business Mathematics and Statistics I

Review of basic mathematics; fundamentals of analytic geometry; functions and managerial planning; elements of calculus with business applications; introduction to statistics.

22.022 *See* 22.012.

22.023 Business Mathematics and Statistics II

Discounts, mark-ups, margin, selling price, mark-downs; simple interest, compound interest; discounting negotiable instruments; instalment purchases; depreciation; insurance; frequency distributions, averages, index numbers, probability, linear correlation, reliability, and sampling.

22.036, 22.726, 22.736, 22.746, 22.836 Introduction to Work Study

A 40-hour single-term appreciation of fundamental work-study techniques. Emphasis on the method-study techniques with minimal time on work measurement. Basic approaches to problem solving and simplification of work in order to effect improvement through product improvement, reduced labour content, and reduced cost.

22.037, 22.737 Work Study I

An introduction to the principles and application of method study in business and industry. Subjects include work content, productivity, problem solving, selection of study areas. Techniques of record include activity (work) sampling, work distribution, outline and flow process charting. Plant layout and materials handling. Motion economy. Work simplification.

22.038 Communication Systems

Study of the physical methods of communication, including mail, telegraph, telephone, radio, and television.

22.047, 22.747 Work Study II

A continuation of Work Study I involving work measurement techniques. Performance rating, time study, production studies, predetermined motion—time systems, analytical estimating, the use of standard data. Procedures analysis with respect to business systems, forms design, office layout, etc. Detailed critical examination of a process or procedure using the systematic approach to effect improvement. The course is supplemented by case problems and projects using techniques learned in both Work Study I and Work Study II.

22.110 Problems Laboratory

An introductory course to initiate the student into the application of known theory. The problems given will be in the areas of business and engineering and will mostly involve mathematics.

22.111 Mathematics

Review of basic algebra, graphs, and logarithms with objective of bringing all students up to a common level as a base for later courses. Business applications will be stressed. New theory will cover basic descriptive statistics and mathematics of finance. Topics under statistics include frequency distributions, graphical presentations, statistical measures of central tendency and dispersion, use of normal curve tables, and simple regression and correlation. Mathematics of finance covers simple interest, compound interest, partial payments, annuities, and methods of evaluating investments.

22.220 Method Study

Introduction to the principles of method study and motion economy. Selection of study areas. Techniques of record—the charting of work using outline, operation, flow, and two-handed process charts. Flow diagraming, multiple activity charts, the use of graphs. Principles of plant layout and materials handling. The application of critical examination in the systematic solution of design and production problems. Supplemented by frequent field trips to enable the student to apply the techniques under existing business and industrial conditions.

22.221 Statistics in Business and Industry

A comprehensive study of the use of statistical inference. Topics include probability theory and distributions, sampling, hypothesis testing, chi-square, rank correlation, F-tests, economic time series, and indexes.

22.330 Performance Measurement

Introduction to work study and the application of the basic principles to business and industry. Work content. Productivity. The need to measure. Performance rating. The theory and practical application of time study. Production studies. Rated activity sampling. Predetermined motion-time systems. Analytical estimating. Standard data systems. Supplemented by frequent field trips to enable the student to apply the techniques under existing business and industrial conditions.

22.331, 22.431 Quantitative Methods for Management

Study of the applications of mathematics in decision-making in business. Break-even analysis, some additional probability, decision-making, scientific inventory management including EOQ, reorder points, and statistical forecasting. An introduction will also be given to vectors, matrix algebra, linear programming, and queueing theory.

22.332 Applied Programming

Instruction will be given in Fortran programming, which will then be used by the student in solving problems in engineering and business.

22.333 Systems and Procedures Analysis

Method study of office procedures. The organization and function of a systems and procedures department. Systems charting. Work distribution, procedures analysis, forms analysis. Forms design and control. Work measurement. Work simplification. Office layout. Manuals. Report writing. Supplemented by frequent field trips to enable the student to apply the techniques under existing business and industrial conditions.

22.431 *See* 22.331.

22.440 Industrial Engineering Concepts

This course will require the application of knowledge gained in other courses to the solution of business problems. The lecture series will familiarize the student with systems used in industry in such areas as scheduling, materials handling and plant layout, inventory management, estimating, and transportation. Students will be required to do basic research to collect information for project assignments as well as to solve case studies.

22.442 Industrial Organization and Operations

Study of the various departments of a business enterprise, their objectives, functions, and relationship to each other in a systems sense. These will include sales, purchasing, engineering, production, product research, personnel, accounting, administrative services. Each of these areas will be supported through case analysis.

22.443 Materials Handling and Control Equipment

An introduction to the common types of industrial equipment. The student will examine the basic principles of operation, their characteristics and usage.

22.726 *See* 22.036.

22.736 *See* 22.036.

22.737 *See* 22.037.

22.746 *See* 22.036.

22.747 *See* 22.047.

22.836 *See* 22.036.

CHEMISTRY

30.101, 30.201 General Chemistry

The material presented in this course includes fundamental principles of inorganic, physical, and organic chemistry.

During the first part of the course the following topics will be presented: atomic structure; periodicity; bonding; practical problem solving; applications of the gas laws; liquids, solids, and changes of state; solution chemistry; colloids; chemical kinetics and equilibrium; ionic equilibrium; electrochemistry; periodic table trends and descriptive chemistry of representative elements.

The latter part of the course will include the properties and major reactions of the following classes of organic compounds: alkanes; alkenes; alkynes; simple aromatic compounds; alcohols; ethers; aldehydes; ketones; carboxylic acids, amines, amino acids, and carbohydrates.

Laboratory work consists of qualitative analysis of common anions and cations; gravimetric analysis of simple industrial materials; volumetric analysis (acid-base and oxidation-reduction) of natural compounds; and basic organic techniques and preparations.

30.102, 30.202 General Chemistry

Basic chemical concepts are stressed to develop an understanding of simple reactions, oxidation-reduction, bonding, periodic trends in chemical properties, solids and liquids, pH, ionic equilibria, and electrochemistry.

The laboratory work is designed to illustrate and complement the lecture material. Typical chemical reactions and properties of common compounds are systematically examined in qualitative analysis. Simple gravimetric and volumetric analysis exemplifies stoichiometric reactions and calculations, while chromatography and ion exchange methods demonstrate more modern techniques. Corrosion processes are examined with emphasis on control and prevention in the industrial situation.

30.103, 30.203 General Chemistry for Health Technologists

A general course in which inorganic and physical chemistry (Part A) and organic and biochemistry (Part B) are presented concurrently. Part A comprises two-thirds of the lecture periods in Term 1 and one-third in Term 2.

Topics presented in Part A include atomic theory and the periodic table; bonding; chemical formulæ and equations; the gas laws, properties of solutions; distillation; equilibrium; properties of acids and bases; kinetics; electrochemistry; and nuclear chemistry.

In Part B the properties and some of the reactions of the major classes of organic compounds are described with an introduction to reaction mechanisms. A selection of biochemical material is presented which includes carbohydrate and fat metabolism; properties of amino acids and their metabolism; properties of proteins and their synthesis; enzyme action; and metabolic effects of hormones, pesticides, and herbicides.

The laboratory work consists of quantitative inorganic analysis, organic synthesis, properties of biological materials, physical methods of their analysis, and enzyme reactions.

30.201 *See* 30.101.

30.202 *See* 30.102.

30.204, 30.304 Chemical Laboratory Techniques

This course teaches basic techniques in sampling, weighing, moisture determinations, ashing, extractions, filtration gravimetric methods, volumetric

methods; instrumental analysis and separation methods will be described, demonstrated, and whenever possible, practised.

30.282 *See* 30.182.

30.301, 30.401 Organic Chemistry

A general course in organic chemistry in which the properties and reactions of all major classes of organic compounds are described: aliphatic and aromatic hydrocarbons, alcohols, acids, phenols, aldehydes; ketones, amines, amides, amino acids, sulphur compounds, carbohydrates, heterocyclic compounds, dyes and polymers. Reaction mechanisms are introduced where these are of value in assisting the student to organize the material.

Laboratory work consists of syntheses of organic compounds, using some of the more important reactions described in the lectures, qualitative chemical analysis, and some physical methods of analysis.

30.302 Physical Chemistry

The course presents the kinetic theory of gases, the first and second laws of thermodynamics, the study of crystals by X-ray diffraction, the phase rule, chemical kinetics, and catalysis. Laboratory work consolidates lecture material and gives experience in practical physical chemical measurements.

30.303 Instrumental Analytical Methods

This course introduces basic theoretical concepts, instrument construction and operation, and general applications of the following methods: measurement of pH; potentiometry; polarography; spectrophotometry (including visible, ultraviolet, infra-red, and atomic absorption); flame photometry; refractometry and polarimetry; solvent extraction; column, paper, and thin layer chromatography, gas chromatography; ion exchange resins; and basic radioisotope counting techniques.

30.304 *See* 30.204.

30.305, 30.405 Chemical Instrumentation

This course presents the basic instrument components, their characteristics, and their modular construction in analytical instrumentation. The emphasis is on signal flow and the information represented by the same. Basic design patterns, as well as practical aspects of servicing, are presented with references to pH meters, polarographs, titrators, spectrophotometers, gas chromatographs, rate meters and scalers, chemical signal sources, electrical components, operational amplifiers as multipliers, subtractors, function generators, and servo-systems.

Laboratory work consists of examination of components and construction of basic instruments described in the lectures.

30.306, 30.406 Analytical Chemistry

Conventional inorganic methods of analysis for the determination of the common metals in ores and alloys. Basic methods of fire assaying for gold and silver. Advanced analytical techniques using various instruments such as the polargraph, spectrophotometer, colorimeter, gas chromatograph, refractometer, spectograph, X-ray scintillometer, X-ray diffractometer, etc.

30.401 *See* 30.301.

30.404 Organic Chemistry

This course presents a survey of the properties and common reactions of the classes of organic compounds which are found in petroleum, or are of importance in the petrochemical industry: paraffins, olefins, alkynes, aroma-

tic hydrocarbons, sulphur compounds, and heterocyclic compounds. The chemistry of the refining processes and of the production of some petrochemicals is presented.

In the laboratory the student will use some of the reactions described in the lectures and will carry out some analyses of petrochemicals using physical and chemical methods.

30.406 *See* 30.306.

ENGLISH

31.101, 31.201 Writing in a Technical Context

The improvement of the student's ability to communicate is the main aim of the course. Types of writing appropriate to the student's present and future needs are discussed and practised, including various forms of technical and business writing. Some current issues related to our technological society are examined to provide the students with practice in understanding complex issues. Differing points of view and their supporting evidence are studied, and the student is encouraged to evaluate their relative merits. The course is unified by a continuing concern with the logic and structure of all types of communications.

31.102, 31.202 Communicating in a Business Context

The objective of the course is to teach students to communicate in a lucid, logical manner through written assignments and oral presentations. Current technological and social problems will be studied to develop an awareness and concern for the contemporary world in which the communication takes place.

31.103, 31.203 Writing and Modern Literature

The course consists of a study of some representative modern fiction and drama, with the intention of developing in the student some understanding of the methods and aims of writers.

31.104, 31.204 Writing and Contemporary Social Issues

The first part of this course consists of studies in communications theory, including semantics, logic, and persuasion, and applications of these topics to the writing of reports. The second part is based on the study of selected social issues, with emphasis on individual and group interaction. Such themes as alienation, urbanization, and integration, as they are presented in literature, will be discussed.

31.201 *See* 31.101.

31.202 *See* 31.102.

31.203 *See* 31.103.

31.301, 31.401 Writing in a Technical Context

This course has the same aim, and uses the same approach, as the first-year course. The study of problems in the selection, arrangement, and presentation of data is continued at a more advanced level. Much of the work involves technical data from the student's own field of study, and concepts relating to the social context of technology.

31.302, 31.402 Business Communications

In this course, students will continue the work of the first year, with emphasis on communication theory, and on practical problems in the interpretation, evaluation, organization, and presentation of data, in both written and spoken form.

31.303, 31.403 Writing and the Mass Media

The course will consist of two parts. Part A comprises brief examinations of the history of English, the relations between language and culture, semantics, the methods of argument and persuasion, and the application of the preceding material to the writing of letters, reports, and scripts. Part B consists of studies in the development, nature, effects, and uses of the media of mass communication.

31.401 *See* 31.301.

31.402 *See* 31.302.

31.403 *See* 31.303.

In addition to these credit courses, the English Department, from time to time, offers the following course (31.904) in reading improvement for students having difficulties. This course is intended to help students cope with the heavy work load at the Institute by improving their reading efficiency, and is voluntary.

31.904 Reading Improvement

This course emphasizes reading rate, comprehension, previewing, skimming and scanning, reading skills in professional and special interest areas, study habits and skills. Classes will meet for 2 hours each week for at least 10 weeks. Each class is limited to 15 persons for emphasis on individual attention. This course is not intended for persons for whom English is a second language.

MATHEMATICS

32.ABC Mathematics for the Engineering Technologies (Except Electrical and Electronics Technologies)

(NOTE.—The order in which the following units of study are scheduled in a particular technology programme is indicated by the subject number 32.ABC, where A is the term number and B and C are the unit numbers associated with that term (e.g., 32.436 indicates a mathematics course running in Term 4 and consisting of Units 3 and 6).)

Unit 1. Basic Technical Mathematics

Topics in algebra, trigonometry, and analytic geometry, with emphasis on technical applications; prerequisite for the courses described in Units 2 to 6.

Unit 2. Calculus I

An introductory course in calculus and its applications involving the differentiation and integration of algebraic, trigonometric, logarithmic, and exponential functions.

Unit 3. Calculus II

Further calculus topics and applications; conics and calculus problems associated with these; power series; partial differentiation; differential equations.

Unit 4. Statistics I

An introduction to statistics. Organization and presentation of data; measures of central tendency and dispersion; frequency distributions; sampling; estimation; hypothesis testing; regression.

Unit 5. Numerical Methods

Elementary numerical methods in theory and practice; iterative methods in the solution of algebraic and transcendental equations; finite differences; interpolation; numerical differentiation and integration; numerical solution of simple differential equations.

Unit 6. Special Topics—Calculus III, or Statistics II, or Analytic Geometry, or Spherical Trigonometry

Further applied mathematics topics of special importance in the student's chosen technology, within one of the categories shown above.

32.170, 32.270, 32.370 Mathematics for Electrical and Electronics, and Health (Biomedical Electronics Option) Technologies.

32.170 Basic Mathematics (Electrical)

This course deals with the theory and application in the electrical and electronic fields of the following areas of study: Trigonometry, with emphasis on wave-forms, vectors, and use of identities; complex numbers and their use in a.c. circuit calculations; logarithmic and exponential functions, with application to transient and power problems; linear equations, matrices and determinants, with application to mesh circuits analysis.

32.270 Calculus (Electrical)

A course in calculus dealing with the following topics, with applications throughout in the electrical and electronics fields: The differentiation and integration of algebraic, trigonometric, logarithmic, exponential, and hyperbolic functions; power series; partial differentiation; differential equations of the first and second order.

This course will include a short course on computing techniques involving basic ideas in flow-charting and programming with the use of the computer.

32.370 Transform Calculus (Electrical)

Laplace transforms; transform pairs of functions and operations, inverse transforms, applications to circuits involving integro-differential equations, the transfer function, pole-zero configurations. Matrix algebra; use of determinants in mesh analysis, simple matrix operations and their application in four-terminal networks. Fourier series; trigonometric form of Fourier expansion, analysis of various wave-forms.

32.182, 32.282, 32.382, 32.482 Mathematics for Health Technology (Except Biomedical Electronics and Nursing Options).

32.182 Basic Mathematics (Health)

This course, together with 32.282, is designed to provide Health Technology students with a good understanding of the mathematical principles and practices used in their various fields of work.

Exponents and logarithms (common and natural); logarithmic and exponential equations, log-log and semi-log graphs.

Introduction to calculus. The derivative and its applications; the integral and its applications.

Special topics. Applications especially suited to specific branches of Health Technology.

32.282 Statistics (Health)

Descriptive statistics—organization and graphical presentation of data: measures of location, variation, skewness, and kurtosis.

Probability, theoretical frequency distributions, sampling and sampling distributions.

Inference statistics—estimation, hypothesis testing, chi-square, non-parametric methods, analysis of variance, quality control.

Correlation and regression.

Special topics.

32.382 Computer Applications I

An introductory course in computing, involving the use of the I.B.M. 360 computing system, and with applications in the Health Technology field. Some subsidiary topics in mathematics, additional to those in Courses 32.182 and 32.282, will be presented.

32.482 Computer Applications II

An extension of 32.382, with emphasis on the use of a computer for problem-solving in the health field. An introduction to data-based systems and information retrieval.

PHYSICS

33.101, 33.201 General Physics (A)

This course is designed to provide the background knowledge required in the Chemical and Metallurgical, Natural Gas and Petroleum, and Mining Technologies. Consequently it covers the main fields of physics—kinematics, dynamics (Newton's laws of motion), friction, statics, angular motion, energy, momentum, simple machines, structure and properties of matter, fluid mechanics, temperature and heat, thermal properties of matter (expansion of solids and gases), thermodynamics, heat transfer, d.c. circuits, electromagnetism, a.c. circuits, wave motion and sound, electromagnetic waves, geometrical and wave optics, relativity and quantum mechanics, atomic and nuclear phenomena. The mathematical treatment requires only algebra and trigonometry, although the use of calculus may occur near the end of the second term. Considerable emphasis is placed on laboratory work, which will include topics in geophysical prospecting for the Natural Gas and Petroleum, and Mining Technologies.

Prerequisite: Thorough grounding in senior secondary-school physics is presumed. Physics 11 in British Columbia is the minimal requirement.

Text: A. Beiser, *Modern Technical Physics,* Addison-Wesley, 1966.

33.102, 33.202 Introductory Physics

This course covers, at a somewhat lower level, approximately the same material as Physics 33.101, 33.201. The course is designed for those process and medical technologies for which secondary-school physics is not a pre-

requisite. Considerable emphasis is placed on laboratory work. Mathematical treatment demands only basic algebra and trigonometry.

Text: A. Beiser, *The Mainstream of Physics,* Addison-Wesley, 1963.

33.104, 33.204 Physics for Building Technology

This course is designed to satisfy the background knowledge required in the Building Technology and consequently covers elementary aspects of the main fields of physics—structure and properties of matter, statics, kinematics, Newton's laws of motion, angular motion, fluids, sounds, calorimetry, thermal behaviour of gases, thermodynamics, electromagnetism, a.c. and d.c. circuits, introduction to optics, atomic and nuclear phenomena. Mathematical treatment requires only algebra and trigonometry, although calculus may be introduced near the end of the second term. Considerable emphasis is placed on problem-solving and suitable applications in the field of Building Technology.

Prerequisite: Thorough grounding in senior secondary-school physics is presumed. Physics 11 in British Columbia is the minimal requirement.

Text: A. Beiser, *Modern Technical Physics,* Addison-Wesley, 1966.

33.106, 33.206 General Physics (B)

This course is similar to 33.101/201, General Physics (A), except that subject-matter related to the Electrical and Electronics, and Instrumentation Technologies is emphasized. A section on the physics of electron emission and semi-conductor behaviour is included.

Prerequisite: As in 33.101/201.

Text: As in 33.101/201.

33.107, 33.207 General Physics (C)

This course is designed to satisfy the background knowledge required in Civil and Structural, Mechanical, and Surveying Technologies and covers elementary aspects of the main fields of physics—structure and properties of matter, statics, kinematics, Newton's laws of motion, angular motion, fluids, sound, calorimetry, thermal behaviour of gases, thermodynamics, electromagnetism, d.c. circuits, brief treatment of simple a.c. circuits, applied electricity, geometrical optics, wave optics, applied optics, atomic and nuclear phenomena. Mathematical treatment requires only algebra and trigonometry, although calculus may be introduced near the end of the second term. Considerable emphasis is placed on laboratory work.

Prerequisite: Thorough grounding in senior secondary-school physics is presumed. Physics 11 in British Columbia is the minimal requirement.

Text: A. Beiser, *Modern Technical Physics,* Addison-Wesley, 1966.

33.109, 32.209 Radiological Physics

This course is designed for diagnostic X-ray technicians and for students in Nuclear Medicine. The course includes selected topics on the structure and physical properties of matter, static electricity, direct and alternating current, magnetism, mechanics and energy, wave motion, thermodynamics, light and optics, elementary quantum physics, production of X-rays, interaction of X-rays with matter, radioactivity, X-ray tubes, photo-multiplier, and other detectors of radiation.

Emphasis is placed on the application of the various physical phenomena in Medical Radiography and Nuclear Medicine.

Texts: A Ridgway and W. Thumm, *The Physics of Medical Radiography,* Addison-Wesley, 1968. A. Beiser, *The Mainstream of Physics,* Addison-Wesley, 1963.

33.201 *See* 33.101.

33.202 *See* 33.102.

33.203 Basic Medical Physics

This course is designed especially for students in the nursing programme. The course is a descriptive rather than a quantitative treatment of the elements of general physics, and dwells in some measure on practical examples of physical principles as found in the field of medicine. There is no laboratory programme associated with the course, but extensive use is made of demonstration experiments during the lectures.

Text: J. T. Jensen, *Introduction to Medical Physics,* Montreal, Lippincott, 1960.

33.204 *See* 33.104.

33.205 Radioactivity

This course is designed for students in the Nuclear Medicine Programme. Physics 33.209 is presumed to be taken concurrently. The course involves a quantitative, rather than a descriptive, approach to those elements of physics bearing directly upon radioactivity and radiation phenomena, atomic structure, X-rays, early experiments in radioactivity, radioactive change and successive radioactive transformations, half life, some key nuclear reactions, the energetics of nuclear change, the interaction of radiation with matter, production of radioisotopes.

Prerequisite: Physics 33.109.

Text: E. H. Quimby and S. Feiteberg, *Radioactive Isotopes in Medicine and Biology.*

33.206 *See* 33.106.

33.207 *See* 33.107.

33.209 *See* 33.109.

33.304 Geophysical Prospecting Methods

This course will stress points of particular interest to those engaged in exploring and developing mineral bodies. It will build on the special lectures and laboratory work given in Physics 33.101/201 to students in the Mining Technology (radioactive, magnetic, and electrical prospecting methods).

Topics dealt with in 33.304 will be, mainly, induced polarization and electromagnetic methods as applied in mineral exploration.

Prerequisite: Physics 33.201.

33.305 The Measurement of Radioactivity

This course is a continuation of Physics 33.205 in that it concerns itself with the methods of detecting radiation discussed in 33.205. The following topics are considered: Statistics of measurement; determinate errors in radioactivity measurement, such as geometry, scattering and absorption; radiation detectors and instruments—ionization chambers, Geiger-Muller counters, proportional counters, scintillation detectors, semi-conductor and

solid-state detectors, systems for data accumulation and presentation; basic measurements, such as survey instruments, radioisotope scanning, multi-hole collimators, positron scanning, coincidence counting.

Prerequisites: Physics 33.109/209, 33.205.

Text: E. Quimby and S. Feiteberg, *Radioactive Isotopes in Medicine and Biology*.

33.330, 33.430 Biophysics

A study of biophysics, with particular reference to the needs of the biomedical electronics technologist. The course will cover mechanics, electricity, magnetism, waves, and heat. The emphasis in lectures, seminars, and projects will be on basic physics as applied to biological systems.

Prerequisite: The lecture development will assume a knowledge of secondary-school physics (Physics 11 in British Columbia).

33.402 Physics of the Respiratory System

This course is designed for students in the Respiratory Technology. It deals with those physical properties of liquids and gases which affect the body functions of respiration and circulation as well as the design of instruments for measuring or simulating these functions. The physical properties of the lung, heart, and circulatory system are covered briefly. A section on the application of ultrasonics in therapy, diagnosis, and surgery is included.

Prerequisite: Physics 33.102/202.

Text: (to be announced).

BUILDING

40.101, 40.201 Design and Draughting

Fundamentals of design, æsthetic and functional; design of utilitarian objects; architectural design principles.

Advanced draughting; lettering; isometric; perspective; presentation techniques, sketching; colour; model building; simple architectural design.

40.102, 40.202 Building Construction

Principles of building construction in terms of the assembly of materials; examination of typical systems of wood and masonry construction; preliminary introduction to characteristics of materials; study of architectural detailing.

Application of the above to the preparation of working drawings, in coordination with courses in Building Structures and Building Services. Trips to building sites and plants.

40.103, 40.203 Building Services

Introduction to building services complex; water supply; waste disposal; heating; electrical illumination. Emphasis on fundamentals and interrelation of services.

Preparation of working drawings for mechanical and electrical systems. Field trips.

40.104 Building Regulations

Origins and purposes of building regulations; typical zoning by-laws and building by-laws; National Building Code; other Acts, codes, by-laws, and regulations related to buildings.

Aspects of common law and law of contract related to building premises.

40.201 *See* 40.101.

40.202 *See* 40.102.

40.203 *See* 40.103.

40.301, 40.401 Design

Short history of architecture and building, particularly since the Industrial Revolution; contemporary architectural masterpieces, with analysis of their planning, structure, services, æsthetic quality, landscaping.

Draughting-room exercises in architectural design, integrated with other courses, sketching and rendering; model-making.

During the summer months between first and second years, students will be required to prepare an illustrated report. This will be presented at the commencement of second year and be marked as part of the second-year Design course.

40.302, 40.402 Building Construction

Continuation of first-year course, but applied to concrete and steel framed buildings; site fabrication and assembly; prefabrication.

Application of the above to the preparation of working drawings, in co-ordination with the courses in Building Structures and Building Services. Trips to building sites and plants.

40.303, 40.403 Building Services

Ventilation; air conditioning; electrical illumination and power supply; mechanical equipment; transportation; communication; acoustics.

Preparation of working drawings related to above, and to projects in Design and Building Construction. Field trips.

40.305, 40.405 Construction Specifications and Estimating

Contract documents; types of specifications; writing techniques; standard format for North America.

Study of materials and methods; properties of materials and components; construction science; use of indigenous materials and methods; field trips to sites and to factories.

Practical specification writing for a project: use of computers for selection of materials and methods, and for production of project specifications using basic specifications.

Construction procedure of design, tendering, site work and supervision: fundamentals of law; contracts; bonds; contractual relationships; rights and responsibilities.

Estimating—cost accounting cycle; measurement of work from drawings; quantity surveying.

Economics of building; practical cost analysis; bid preparation and submission; contract management.

Cost accounting; production control. Approximate estimates for cost planning and control. Correlation of all building courses into the design-estimating-production procedure.

40.308, 40.408 Environmental Services

Gas supply systems; hot-water space-heating system design; practical fan laws; air-cleaning; steam-coil air-heating; hot-water coil heating; combined

direct radiation and coil-heated air-heating and ventilating systems; temperature control for space-heating and air-conditioning processes and design; air-conditioning controls.

40.309, 40.409 Landscape Draughting (Biological Science Technology)

Elements of surveying; elements of building; landscape construction; draughting related to the above; specifications; estimating; field trips.

40.314, 40.414 Planning and Design (Hotel, Motel, and Food Service Management Technology)

Fundamental introduction to blueprint reading; contracts; principles of design for hotels and restaurants; department layouts, floor plans, and traffic flows; selection of equipment and furnishings; principles of decoration and colour theory; lighting; sources, specifications, and qualities of furnishings, materials, and fabrics. Trips to plants, shops, hotels.

40.385 Consumer Product Design (Marketing Technology)

An introduction to the fundamentals of design of consumer products, functional and æsthetic; furnishings, household goods, fabrics, clothing, chattels; relation of materials to manufacturing techniques; influence of "fine art" and fashion trends. Demonstration of principles through field-trip observation and evaluation reports.

40.401 *See* 40.301.

40.402 *See* 40.302.

40.403 *See* 40.303.

40.405 *See* 40.305.

40.406 *See* 40.306.

40.408 *See* 40.308.

40.409 *See* 40.309.

40.414 *See* 40.314.

CHEMICAL AND METALLURGICAL

41.102 Laboratory Workshop

Use of hand and bench tools; soldering, brazing, and gas welding. Glass-blowing techniques; repair of chemical glassware and construction of simple apparatus. Basic electrical circuitry, electrical fittings, switches, and safety precautions. Organization and control of chemical laboratory, record-keeping, ordering and inventory.

41.103, 41.203 Engineering Materials

Comparative properties of all classes of engineering materials, including metals and alloys, woods, plastic materials, ceramic materials, concrete, and composite materials; bonding forces in solids; microstructures, plastic deformation, work-hardening, recrystallization; failure of materials under operating conditions; plastic materials; elastomers; wood and wood products; introduction to binary phase diagrams of alloy systems; precipitation hardening; heat treatment of steels; plain carbon and alloy steels; ceramic

materials; inorganic cements; concrete; composite materials; electrical and magnetic materials; corrosion and weathering of materials. Laboratory assignments in physical testing of materials, properties of materials in operating environments, and comparison of materials.

41.203 *See* 41.103.

41.204 Electrical Materials

Comparison of materials of importance to electrical and electronics technology, including metals, alloys, plastics, and ceramics. Common causes of failure in service, such as fatigue, electrical failures, weathering, and corrosion. Selection of materials on the basis of mechanical, electrical, and magnetic properties.

41.207 Unit Processes

Use of flow charts for representing unit sequences and unit operations; instrumentation flow plan symbols, material balances, heat balances, stoichiometry. Production of sulphuric acid, caustic soda, and chlorine, phenol, synthetic resins. The pulping processes, petroleum refining, sugar refining. Smelting and metal refining.

41.208 Properties of Materials

Comparative properties of engineering materials with emphasis on applications to Electrical and Electronics Technology; plastics, ceramics, metals, and alloys; mechanical properties, electrical properties, corrosion properties, and factors leading to service failures in operating environments.

41.210 Environmental Sampling Techniques

The course will outline the recognized methods of obtaining samples for physical and chemical pollution analysis with emphasis on collection procedures and sampling frequency. Techniques studied: solid sampling, liquid sampling, gaseous sampling, bacteria and micro-organism sampling, sampling apparatus.

41.304, 41.404 Physical Metallurgy

Relation of extractive metallurgy to physical metallurgy; iron- and steelmaking processes; review of crystallography; solidification of metals and alloys; casting methods and defects; foundry technology; metal-forming operations; review of phase diagrams for binary and ternary alloy systems; isothermal transformations in steels; heat-treating techniques; non-ferrous metals and alloys; welding metallurgy; principles of non-destructive testing. Laboratory sessions supplement the lectures by field trips to industrial plants and emphasize physical testing of materials, metallography and non-destructive testing.

41.305, 41.405 Assaying

Analytical chemistry applied to the ore minerals, with special attention to fire assaying for gold and silver. Gravimitsic, volumetrie, and instrumental methods are developed for the more common metals. Students are encouraged to attempt the examinations for the Provincial Government licence to practise assaying in British Columbia after at least one year's experience following graduation.

41.307, 41.407 Extractive Metallurgy

Essential unit operations in mineral processing: particle sizing; comminution—crushing and grinding; screening; classification; free settling and thickening; gravity concentration; magnetic and electrostatic concentration; materials transport—ore bins, conveyors, pumps and pipe-lines; statistical methods in sampling; instrumentation applications; mathematical models for computer simulation of plant operations. Fundamentals of extractive metallurgy—stoichiometry, thermochemistry, fuels and combustion, pyrometry, heat flow, refractories, furnaces, reaction rates and chemical equilibria. Essential unit processes in extractive metallurgy—gas-solid processes; retorting; blast-furnace smelting; converting; distillation; electrorefining and electrowinning; hydrometallurgical processes of leaching and precipitation.

41.309 Medical Materials

Comparative properties of all classes of engineering materials with emphasis on biomedical applications, including metals, plastic materials, adhesives, and composite materials; bonding forces in solids, microstructures, plastic deformation and annealing, alloying, heat treatment of steels, and nonferrous metals; polymers, elastomers, and organic adhesives; corrosion and ageing of materials; interaction of materials with biological tissues, toxicity; reference sources and materials selection.

41.311, 41.411 Pollution Science

This course will complement the course in Environmental Sampling Techniques, Waste Disposal Methods, and Environmental Analytical Methods. It is divided into three parts.

Part A.—An introduction to organic chemistry and to biochemistry with emphasis on equilibria, hydrocarbons, alcohols, acids, alkyl halides, amines, mercaptans; with special emphasis on carbohydrates, amino-acids, proteins, soaps and detergents, pesticides, enzymes, metabolic reactions, lipids and fats, and cellulose and liquor.

Part B.—An introduction to microbiology. Basic techniques used in microbiology; types of organisms and sources; micro-organisms in water; special methods for the determination of pollution indicators; procedures in the water bacteriology laboratory.

Part C.—An introduction to pollution laws and basic meteorology.

41.314, 41.414 Mineral Processing

Purpose of mineral dressing. The essential unit operations: particle size measurement; comminution—crushing and grinding, Bond's law; screening; classification—mechanical, cyclones, thickening, free settling; flotation-surface chemistry of solid, liquid, and gas phases in mineral pulps, collectors, frothers, activators and depressants; gravity concentration; electrostatic and magnetic concentration; materials transport—ore bins, belt conveyors, pumps and pipe-lines; statistical approach to sampling methods; instrumentation and automation applied to concentrator operations; mathematical models of unit operations for use in computer simulation of plant conditions. Emphasis is placed on the numerical solution of problems of the type encountered in design and operation of plants.

41.341, 41.441 Unit Operations

First and second law of thermodynamics; enthalpy, entropy, phase rule, thermodynamic diagrams and tables; fluid flow and measurement in pipes and channels, piping, pipe fittings, and valves; solid handling, grinding, crushing, screening, mixing, settling, sedimentation, filtration, floation; flow of heat, conduction, convecion, radiation, film and over-all transfer of coefficients, heat exchangers; principles and application of equipment for evaporation, distillation, absorption, extraction; humidification and dehumidification; drying; crystallization; ion exchange.

41.404 *See* 41.304.

41.407 *See* 41.307.

41.408 Assaying (Extractive Metallurgy Option)

The identification of economically important minerals, general principles of quantitative analysis of ore samples, including representative volumetric determinations such as acid-base, oxidation-reduction, and volumetric precipitation. Fire assaying, stressing fusion and combination wet-fire methods. Practical applications in instrumental and physiochemical analysis, including the latest analytical aids, polarography, spectrophotometry, atomic absorption, and emission spectroscopy.

41.411 *See* 41.311.

41.412 Waste Disposal Methods

The unit processes and unit operations of solid, liquid, and gaseous treatment systems. Incineration, land fill, screening, sedimentation, flotation, neutralization, oxidation reduction, precipitation coagulation, aerobic systems, activated sludge, trickling filtration, aerobic digestion, anærobic methods, stripping, ion-exchange, electrodialysis, adsorption, sorption, reverse osmosis, distillation, defoaming, foam-separation cooling towers, centrifuges, bag filters, cyclones, settling chambers, scrubbers, electrostatic precipitators, fume incineration, tall chimneys.

41.413 Environmental Analytical Methods

Physical, chemical, and biological methods of analysis of solid, liquid, and gaseous streams; B.O.D., carbon in water, nitrogen and phosphorus in water, chlorides, sulphates, alkalinity, surfactants, pesticides. Use of Orsat midget impinger, X-ray, photofluorimeter.

41.441 *See* 41.341.

CIVIL AND STRUCTURAL

42.101 Civil Engineering

This course includes the subjects Elementary Hydrology, Concrete Technology, Statics of Structures. In addition, an array of typical civil engineering problems are examined for solution. These solutions may be structural, analytical, geometric, communicative, or economic. Visiting lecturers, movies, slides, and field trips make the student familiar with civil-engineered structures, their uses and their methods of construction.

Elementary Hydrology (42.102).—The application of precipitation data to various run-off areas is learned in order to predict run-off yield and flood magnitude. Measurement of storages and flows in the field is studied together with characteristics of open channel flows.

Concrete Technology.—Cement—types, chemistry, manufacture, and testing. Aggregates—sources, types, production, and testing. Concrete properties—strength, durability, permeability, workability, and testing. Concrete mix design. Production—mixing, transporting, placing, finishing, and curing. Formwork—design, construction, and stripping. Concrete products—precast, lock, pipe, etc. Special topics—cold-weather concreting, colouring, finishing, additives. Laboratory experiments and a field trip.

Statics (42.103).—Vectors, force systems, graphical analysis, resultants, components, moments, equilibrium laws, force polygons, funicular polygons, frames and trusses, stress diagrams, Bowes' notation, flexible tension members, load, shear and bending moment curves. Closely supervised problem sessions are used to provide the student with practice in common analytical and graphical solutions to problems of static load on simply determinate structures.

42.107 Building Structures

Historical development and relation to structural design; vectors and force systems; graphical representation; resultants and components; moments and couples; conditions of equilibrium; force polygon; funicular polygon; co-planar systems; three-dimensional systems; frames and trusses; stress diagram and Bowes notation; chains and cables; vertical shear force and bending moment diagrams; related problems and experiments with emphasis on building structures, retaining walls.

42.201 Civil Engineering

This course includes the subjects Elementary Hydraulics, Elementary Structural Design, Strength of Materials. An array of problems especially from the realms of transport and distribution are presented and solutions examined. Consequently the course introduces highways, airports, wharves, harbours, breakwaters, conveyors, pipe-lines, and irrigation works.

Elementary Hydraulics (42.202).—Hydrostatics, properties of fluids, pressure, centre of pressure; flow of fluids, equation of continuity, velocity head, venturi, jets; orifices; notch and weir, friction and pipe flow; Reynold's experiments, water hammer; flow, laminar and turbulent; open channel flow, regular channels, hydraulic jump, irregular channels; meters, valves, pumps. Laboratory experiments form a part of this course.

Elementary Structural Design.—Historical development of contemporary structural systems; loading, types and assumptions; principles of working stress design and ultimate load design; tension members in steel and timber; connections in steel and timber; compression members under axial loading; trusses and frames; theory of flexure and distribution of bending and shear stresses; deflection and design of beams in steel and timber; combined bending and compression; eccentrically loaded columns; principles of bending in reinforced concrete; design of simple beam and slab with tensile reinforcement only; related problems and model experiments.

Strength of Materials (42.205).—Simple stresses; stress, strain elasticity; compound bars and columns; temperature stress; elastic limit; limit of proportionality; yield; ultimate; factor of safety; load factor; ductility; resilience; fatigue; shock. Properties of sections; bending moments; shear forces; theory of flexure; slope and deflection of beams; restrained and continuous beams. Strut theories; eccentric loading, lateral loading. Compound stress and strain; ellipse of stress; Poisson's ratio; principal stresses and strains;

Mohr's circle. Testing techniques; machines; extensometers; strain gauges; brittle lacquers; photo elasticity; evaluation of results.

42.207 Building Structures

Historical development of structural systems; contemporary structures; principles of structural design; discussion of structural materials and their properties.

Assumptions of loading and types of loading; stress, strain, and elasticity; simple stresses; temperature stresses; composite material and resultant stresses; yield; factors of safety and load factors.

Properties of sections, bending moments, and shear forces; theory of flexure; slope and deflection of beams; restrained and continuous beams.

Axially loaded columns; tension and compression members; connections.

Introduction to soils, foundations, piling, and retaining walls.

42.301 Civil Engineering

This course includes the subjects Introductory Soils Mechanics and Geology, Highway Engineering, Structural Design, Municipal Services. Applications of hydraulic theory in the fields of water supply, wastes disposal, and energy production are given, with guest lecturing on pollution and pollution control.

Soils Mechanics and Geology.—Fundamentals of geology; rocks and minerals; formation of soils, site exploration; sampling methods; field testing; classification of soils; soil particles; structure of soils; porosity; void ratio; moisture content; permeability; ground-water movement; frost action; consolidation theory; settlement; shear strengths; deformation; slope stability; bearing capacities; excavations; types of foundations; earth retaining structures.

Highway Engineering.—Highway geometry: curves, spirals, superelevation, widths, sight distances, surfaces, grades, safety, signs, and lighting. Highway performance: foundation material, sub-bases, base courses, pavements, behaviour of these materials under varying conditions of load, weather and temperature, drainage, maintenance. The evaluation and design of roadways using deflection data; the Benkelman Beam use and subsequent evaluation of materials; field procedures, compaction specification. Streets: classification, street geometry, widths, sections, drainage; service trench effects, street equipment, lighting, street use, and public relations. Subdivision patterns, the street as dictated by land-use planning.

Structural Design.—Plate web girder; built-up sections in steel and timber; beam column connections; steel and timber detailing and fabrication. Restrained and continuous beams; strain energy; column analogy; moment distribution; tapered beams. Reinforced concrete beams; tee beams, compressive reinforcement; one-way and two-way slabs; footings; retaining walls; reinforcement detailing; scheduling; concrete placement and formwork design.

Municipal Services.—The placement, specification, and recording of all below-grade services in community development; design and draughting of sanitary sewers, storm sewers, water-main systems, and streets. Students gather data in the field and, against a land-use proposal, design needed services for a specific area. Field trips are taken to observe existing installations and works in construction.

42.307 Building Structures

Reinforced-concrete beams; tension steel only; one-way and two-way slabs; compressive reinforcements; tee beams; axially and eccentrically loaded columns; simple footings and retaining walls; reinforcing detailing, schedule, and placement; design of forms.

42.401 Civil Engineering

This course includes the subjects of Work Study, Soils Mechanics and Foundations, Municipal Services, Costing and Specifications, Bridge and Building Practice and Scientific Computer Use.

Work Study.—See 22.747 of the Business Courses.

Soils Mechanics and Foundations.—More intensive study of specifically civil engineering applications; compaction and stabilization of soils; caisson foundations; sheet piling; cofferdams; tunnels and conduits; dams, foundation failures; earth dams; design of cuttings and embankments; highway pavements, airport pavements. Laboratory tests, model experiments, and field trips to exploration and construction sites.

Municipal Services.—The considerations and procedures connected with the layout, design, and construction of city streets. Wherever possible the learning will take place in a design project of some local street and student work may be compared with professional design. Construction may follow.

Costing and Specifications.—Fundamentals of contracts; study of contract documents; specifications as contract documents and as technical directives: contract procedures—the estimating and cost-accounting cycle; measurement and pricing of engineering work; cost records and analysis; unit prices.

Bridge and Building Practice.—Visiting lecturers, movies, and field trips will present practical construction problems and their solutions. This will cover the fields of investigation, design, fabrication, and erection of bridges and buildings, and job layout, job organization, and project financing.

42.402 Civil Engineering

This course is similar to 42.401 but is designed to include Traffic Engineering. To permit this the subjects of Costing and Specifications, Bridge and Building Practice are omitted for students choosing this elective.

Traffic Engineering.—Modes, volumes, trends; accident diagrams and analysis; intersections; signs and markings; signals; parking; street capacities; geometrics; street classification; pavement widths; regulations; urban traffic planning; traffic inventory; travel characteristics; forecasts.

42.403 Civil Engineering

This course is similar to 42.401 but permits extended studies in Structural Design. Bridge and Building Practice is also more extensive. To permit these extensions the subjects of Work Study and Municipal Services are omitted, and Soils Mechanics is reduced for students choosing this elective.

Structural Design.—Portal and multi-story frames; wind analysis; shear and moment in arches; 3-pin, 2-pin, and fixed arch; suspension bridge. Shear flow; shear centre; torsion in beams; curved beams. Tension coefficients; space frames. Flat slabs; prestressed beams; ultimate load design of reinforced concrete. Experimental stress analysis, computer analysis, and discussion of advanced structural forms. Problems and experiments in application of principles to structures.

42.407 Building Structures

Combined bending and axial loads; eccentric columns in steel and timber; built-up sections in steel and timber; beam-column connections.

Restrained and continuous beams; strain energy; moment-area; moment distribution; portal and multi-story frames; steel and timber detailing and fabrication.

Discussion of ultimate load design, prestressed concrete, advanced structural forms, and experimental stress analysis.

ELECTRICAL AND ELECTRONICS

43.101 Circuit Devices and Techniques

Most of the time allotted to this course is spent in the laboratory. The course deals with the physical characteristics of solid-state devices, and the physical and electrical properties of circuit components, such as resistors, capacitors, inductors, conductors, switches, relays, etc. It also covers the various techniques involved in fabricating these components into circuits. Printed-circuit board layout, manufacture, and assembly is covered in detail, and the student participates in the complete fabrication of a printed circuit.

The principles of quality control are also covered during the course.

43.102 Electrical Circuits

This course is a theoretical and practical introduction to linear circuit analysis as applied to direct-current circuits. The fundamental concepts and techniques involved in circuit analysis are given at a level requiring a working knowledge of linear equations, determinants and matrices, trigonometry, logarithms, and the exponential function.

The course includes a study of the important concepts in electricity, such as energy, work, current, voltage, resistance, capacitance, inductance, and power; circuit laws, rules and techniques such as Ohm's and Kirchhoff's laws, divider rules, Thevenin's and Norton's theorems, superposition, nodal and loop analysis, and the maximum power transfer theorem; application of these techniques to the analysis of series, parallel, and series-parallel networks; the behaviour of circuits containing resistance and capacitance or inductance when a d.c. voltage is applied, and an introduction to the d.c. current and voltage characteristics of semi-conductor diodes and transistors.

43.132 Electrical Fundamentals

This course is specially adapted to the requirements of both the Instrumentation and Systems Technology, and the Natural Gas and Petroleum Technology. Its objective is to introduce the student to the laws, characteristics, and analysis of basic electrical theories, circuits, and devices. Theory is confirmed and applications demonstrated by practical sessions in the excellently equipped laboratories, where measuring instruments and techniques are also studied.

Topics covered include a study of the d.c. parameters of current, voltage, resistance, power, and conductance; temperature effects; magnetism; behaviour of devices in d.c. circuits; time constants; and circuit analysis and rules applied to simple networks in series, parallel, and series-parallel configurations. The course also includes a study of a.c. phenomena, such as the sine wave and sine-wave generation; effective and average values; impedance, admittance, power, phase, and power-factor relationships in both series and parallel circuits, vector analysis, behaviour of devices in a.c. circuits; impedance transformation and matching; and simple filter circuits.

43.202 Electrical Circuits

This course in analysing single-phase alternating-current circuits is a continuation of Electrical Circuits 43.102.

Course content includes: the sine wave; average and effective values; impedance; admittance; power and power factor; the characteristics of

resistors, capacitors, and inductors in a.c. circuits; laws, rules, and techniques applied to series, parallel, and series-parallel a.c. circuits; resonance; complex algebra and phasor diagrams applied to a.c. circuit analysis, and an introduction to coupled circuits.

43.205 Electronic Circuits

This is a course in understanding and designing basic electronic circuits. Although dealing almost entirely with solid-state devices, vacuum tubes are mentioned. Typical topics include the following: semi-conductor physics applied to the PN junction and bipolar transistor; meaning and interpretation of characteristic curves; basic voltage and current amplifying circuits; loadline analysis and choice of Q-point; choice and design of bias circuits; stability; a.c. equivalent circuits; interstage coupling and frequency response considerations; feedback; oscillation and oscillator circuits; power supplies, including voltage and current regulating circuits.

43.232 Electronic Fundamentals

This course is a continuation of 43.132 and is given only to students of Instrumentation and Systems Technology. The first part of it consists of a further study of electrical networks and signal-filtering circuits. The balance of the course is devoted to electronic topics beginning with basic semiconductor theory leading to the PN junction and the bipolar transistor. The characteristic curves of semi-conductor devices are discussed to bring out the properties of these devices which make them useful in amplifier and oscillator circuits. Also covered are signal-coupling techniques and the applications of feedback, leading into a discussion of oscillation and oscillator circuits. The student also learns about power supplies and the use of electronic regulating and filtering circuits. He also examines methods of modulation and demodulation of signals, and looks at basic pulse circuits. Principles of operation and applications of vacuum tubes are also briefly mentioned. The course concludes with an introduction to basic logic theory and circuits.

43.303 Digital Techniques

The objective of this course is to introduce the student to those circuits and techniques upon which design and operation of the digital computer are based. These techniques are extremely important since they are now being employed in nearly every area of the electrical and electronics field, including communications, test equipment, industrial control systems, and navigation systems. Topics include: number systems; applied Boolean algebra; circuit analysis and synthesis; AND, OR, NOT logic; NOR and NAND logic; encoding, decoding, and gating systems; counters and counting systems; rate scalers and rate multipliers; shift registers; adders and arithmetic systems; memory systems; analogue to digital and digital to analogue conversion; principles of direct digital control (DDC).

43.311 Electrical Equipment

This course covers the theory, characteristics, and operation of d.c. generators and motors, of transformers, and of single-phase and three-phase induction motors. The fundamental theory of operation and the characteristics of each piece of equipment are presented so that the student may understand the application of the equipment in a complete electrical system. Characteristics such as voltage and speed regulation, efficiency, starting current, torque, and ratings are discussed in detail. Typical examples of all of the above equipment are operated and tested in the laboratory.

43.312 Electrical Circuits

This course is a continuation of Electrical Circuits 43.202. It also serves as an introduction to Circuit Analysis 43.412. The first section of the course deals with phasor representation of a.c. quantities, practical methods of impedance determination, and power-factor correction. Topics covered in the second section of the course are: single-phase two- and three-wire distribution systems, balanced and unbalanced three-phase systems, three-phase transformer connections, and third-harmonic analysis. The final section of the course deals with the dynamometer movement and its application to single-phase and three-phase voltage, current, and power measurements.

43.314 Industrial Electronics

This course is an extension of course 43.205. Throughout the course, special emphasis is placed on semi-conductor devices and circuits which have direct application to industrial control. Topics include: d.c. amplifiers, linear integrated circuits, field-effect and unijunction transistors, thyristors, thyratrons, and magnetic amplifiers. Phase control of single and polyphase SCR power amplifiers as well as overcurrent, overvoltage, and thermal protection of power semi-conductors is investigated.

Throughout the course, applicable measurement techniques and use of test equipment is stressed. The topics discussed in this course form the basis of the investigation of electronic control systems in course 43.414.

43.320 Measurements

This is a lecture and laboratory course on the principles and applications of electrical and electronic measuring instruments. Topics to be discussed include: meter movements, with their principles of operation, construction, and characteristics; instruments for the measurement of voltage, current, power, energy, resistance, impedance, and frequency; the cathode-ray oscilloscope, with its principles of operation and application to the measurement of electrical parameters; signal sources; special read-out instruments, such as chart recorders and digital instruments; transducers, such as thermistors, thermocouples, and strain gauges; techniques involved in measurement; accuracy, repeatability, and traceability in measuring systems and techniques; elementary calibration techniques.

43.325 Electronic Circuits

This course is a continuation of 43.205. It deals with the operation and design of further transistor circuits not previously covered in 43.205, such as tuned amplifiers, d.c. amplifiers, and push-pull and complementary power amplifiers. The course also introduces other solid-state devices, such as the field-effect transistor, the unijunction transistor, the tunnel diode, the linear integrated circuit, and various members of the thyristor family. A number of circuits using these devices will be examined.

Part of the course will be devoted to the development and application of small-signal equivalent circuit analysis techniques. Some time will also be spent on topics which prepare the student for Pulse Circuits 43.425.

43.326 Communications

This course presents the fundamentals of modern electronic communication systems. The characteristics of human speech and hearing form the introduction to the course and set the requirements for telephone and radio communications. Common forms of modulation (i.e., AM, FM, PM, and SSB) are analysed in terms of useful power and occupied band-width along

with standard methods of generation and demodulation. Other areas to be covered include basic receiver and transmitter circuits, antenna principles, and electromagnetic-wave propagation and frequency division multiplexing as applied to telephone toll systems.

43.331 Electrical Equipment Applications

This is a course given to the Mechanical Technology students on industrial electrical equipment, with emphasis on the basic theory and characteristics of a.c. and d.c. motors, their application to typical electro-mechanical drive systems, and the methods of protecting and controlling these motors. The student is helped in using his first-year mechanical courses to analyse the power requirements of the driven equipment. The student is also introduced to industrial electrical-power systems and related equipment. Topics covered are the outside sources of energy, including utility rate structures, transformation into primary and secondary voltage levels, methods of distributing power throughout the plant, methods of switching, voltage control, and power-factor correction.

43.343 Digital Techniques

The objective of this course is to introduce the Computer Programming student to the logic circuits and logic techniques upon which the design and operation of the digital computer is based.

These techniques are extremely important, since they not only form the basis of digital computers but are used extensively in communications, test equipment, navigational systems, and industrial control systems.

Topics include: number systems; applied Boolean algebra; circuit analysis and synthesis; AND, OR, NOT logic; NOR and NAND logic; encoding, decoding, and gating systems; counters and shift registers; adders and arithmetic systems; analogue to digital and digital to analogue conversion.

43.411 Electrical Equipment

This course is a continuation of course 43.311. It covers the theory, characteristics, and operation of three-phase synchronous generators and motors; of protective devices, such as fuses, circuit-breakers, protective relays, and lightning-arresters; of motor starters, both full voltage and reduced voltage; and of electronic control equipment for d.c. and a.c. machines. Typical examples of all of the above equipment are operated and tested in the laboratory.

43.412 Circuit Analysis

This course is primarily a problem-solving course on electrical power systems. Typical utility and industrial power-system problems are presented for analysis. Certain practical problems are studied further in the laboratory sessions. The course introduces the use of per unit and per cent values for solving three-phase power-system problems in voltage-regulation, load-flow, and short-circuit studies. The techniques of symmetrical components are presented to solve unbalanced polyphase circuit problems. The course also covers the use of power circle diagrams for analysing transmission-line power-handling capabilities and the use of power angle curves for checking system stability.

43.414 Automatic Control Systems

The objective of this course is to integrate the principles, devices, and circuits investigated in third-term electrical option courses into practical indus-

trial control systems. Topics include: magnetic relays, contactors, pilot devices, static switching-devices and transducers, in all cases emphasizing the application of these devices to the logical design, testing, and trouble-shooting of practical control schemes.

The theory of feedback systems is investigated and the concept of a transfer function is introduced and applied to devices and circuits studied in term 3. This information is utilized in the design, analysis, and testing of electrical and electronic systems for controlling such variables as voltage, current, position, speed, etc.

The basic principles of telemetry and supervisory control are introduced and applied to typical industrial systems.

43.418 Industrial Systems Design

This course covers problems encountered in the design of a typical industrial plant electrical distribution system. Design problems associated with commercial buildings are also covered. Problems deal mainly with the selection and specification of equipment required for the appropriate parts of electrical systems for the above type of buildings. Topics include: lighting layouts; branch-circuit wiring; feeders; lighting and power panels; switchboards; motor-control centres; voltage selection; grounding of systems and system protection. One-line diagrams of appropriate parts of the system are also prepared.

43.419 Utility Systems

This course deals with the primary generation, transmission, and distribution of electrical energy by the utilities. The course covers the generation of electricity from many forms of energy (hydro, thermal, nuclear, etc.), the transmission of this energy to the populated areas, and its distribution to the ultimate user. Topics include: utility company organizations; load characteristics, demands and rate structures; radial, ring, and network distribution systems; types and layouts of substations and load dispatch centres; types and characteristics of high-voltage transmission towers and conductors; relay protection of electrical equipment and systems; types of generating stations, major station equipment (prime-movers and station auxiliaries, with their characteristics), and general layouts; and planning for system additions, considering stability, voltage regulation, load growth, etc.

43.421 Electrical Systems

This course covers the distribution and utilization of electric power. The techniques for analysing the variations in the large power requirements of industry and other large users are presented. The charges made for total electrical energy used and variable demands are calculated by applying typical utility rate structures, and the student is acquainted with methods used to optimize the use of large quantities of power, using computer control.

An investigation of the characteristics of a polyphase industrial system is followed by a discussion of protective devices, such as circuit-breakers and fuses. A.c. and d.c. machines are studied, with particular emphasis on those characteristics which affect performance of the machine when used as an element in a control system. A great deal of power supply and control equipment in the electrical power field is now manufactured using semiconductors. Some examples of this type of equipment will be presented in lectures and tested in the laboratory.

43.425 Pulse Circuits

This course deals with the switching properties of bipolar transistors and junction diodes and their application in the design of pulse circuits. Design investigations are carried out on astable multivibrators, free-running blocking oscillators, monostable multivibrators, triggered blocking oscillators, bistable multivibrators, voltage and current ramp generators, and the common forms of logic circuits.

43.427 Microwave

This is a course on the theory of propagation, signal-handling techniques, and measurement techniques at microwave frequencies.

Topics covered are: impedance measurements; conventional transmission-lines; rectangular, circular, and elliptical wave-guides; antennas; travelling waves; standing waves; V.S.W.R. measurements; the Smith chart and its uses; wave-guide components, including tees, directional couplars, isolators, circulators, filters, attenuators, terminations, loads, cavities, wavemeters, and the Klystron, the travelling wave tube, the magnetron, the varactor, and other active devices.

This course is systems oriented, and the above components are studied from a "systems" point of view.

43.428 Electronic Elective

The student takes *one* of the following courses:—

(*a*) *Telecommunications Systems*

This elective is designed as a systems course for those wishing to specialize in the communications field. Subjects covered include: telephone carrier and microwave systems; frequency division multiplexing; time division multiplexing; common forms of pulse modulation and their applications; signal path and siting considerations; radar systems and navigational aids.

(*b*) *Digital Computer Systems*

The objective of this course is to develop familiarity with the digital computer and its application to process control and supervisory systems. Topics include: digital computer organization; subsystem analysis; elementary programming; input and output systems; interfacing with digital systems, interfacing with analogue systems; direct digital control (DDC); numerical control and numerical control systems; application of the digital computer to process control systems.

Laboratory sessions apply the principles presented in the lectures to actual digital computers and digital systems. Students will develop skill in programming, design and implementation of logic systems, and evaluation of system performance.

(*c*) *Circuit Design and Development*

This is a course in designing and fabricating modern electronic circuits. Emphasis is placed on the marriage of discrete transistor and integrated circuit components in the over-all circuit design.

The objective of this course is to arrive at a design that will economically meet a set of system specifications.

Topics that lend themselves to this approach are

(i) modern selective active filter networks;

(ii) cascaded, solid-state, tuned RF amplifiers; and

(iii) broadband solid-state amplifiers.

It is the intent of this course that the student carries his design through to the production of a finished engineering prototype.

(*d*) *Broadcasting Systems*

The objective of this course is to give the student an opportunity to apply much of the general training he has received in electronics to a specialized field—broadcasting. A general coverage of the fields of AM, FM, FM multiplex, monochrome TV., and colour TV. will be followed by analysis of some of the specialized systems used in cameras, audio and video tape recorders, switchers, transmitters, etc. Students will become familiar with the use of test equipment, such as distortion meters, spectrum analysers, frequency monitors, and special-purpose oscilloscopes.

43.429 Supervisory and Control Systems

This course provides an introduction to the principles and practices basic to telemetering, supervisory, and automatic control systems. Topics covered will include: transducers and data-acquisition devices; data-transmission systems; data-recording systems, including graphic systems and magnetic systems; servo system and servo mechanism fundamentals; stability criteria for feedback and control systems; analogue and digital servo mechanisms; and industrial applications of telemetering and control systems.

43.433 Digital Computer Systems

The objective of this course is to develop familiarity with digital computers, digital instrumentation, and digital data-acquisition systems and their applications in the medical field.

Topics include: digital computer architecture and machine organization, with emphasis being placed upon the input-output system; machine language programming and the interaction of software and hardware; interfacing a digital computer to digital devices for data acquisition and control purposes; interfacing a digital computer to analogue systems, which will also include an analysis of A/D converters and digital voltmeters; acquisition of data and storage of magnetic and punched paper tape.

Interfaces will be made to a number of instruments, such as E.C.G. and E.E.G. machines. Major emphasis will be placed upon the acquisition and storage of data, but a number of laboratory sessions will deal with the processing of data and methods of displaying the results.

BIOLOGICAL SCIENCES

44.121 Introductory Microbiology

The course is designed to train students in the basic microbiological procedures employed in a laboratory: the use and care of the microscope; staining methods; aseptic techniques; methods of identifying micro-organisms.

44.122 Biology

A study of the principles underlying living phenomena, including the organizational attributes of living matter. Evolutionary development is traced from one-celled organisms to higher plants and animals. The economic importance of various classes of plants and animals is included.

44.201 Food Processing

The composition of foods. Nutritional aspects. An introduction to the processes of canning, freezing, pasteurizing, dehydrating, salting, smoking, fermenting, and treating food with ionizing radiations. Experimental lots of food will be preserved by these methods during laboratory periods.

44.221 Microbiology for Food Processing

The application of microbiology to food-manufacturing. The isolation of micro-organisms of significance to food-processing for purposes of differentiation and classification. Maintaining high bacteriological standards in processed foods. Shelf-life studies. Spoilage control. Food fermentations. Assessing microbiological test results and report writing to management.

44.223 Microbiology for Food Production

The application of microbiology to agricultural food production. The taxonomy of micro-organisms of significance to food production. Pollution control. Microbiological assays. Assessing and reporting microbiological test results.

44.251 Food Production

A general introduction to the study of soils, plants, and animals as related to the production of food.

44.253 Introductory Botany and Soils

A general introduction to the study of plants and soils.

44.263, 44.363 Applied Horticulture

The classification, morphology, and growth of horticultural plants, with emphasis on those used in landscaping. Climate and hardiness. Plant propagation and growth control. Basic greenhouse techniques. Turf grasses. Floriculture and arboriculture.

44.301, 44.401 Food Processing

Detailed studies of specific food-manufacturing processes, including dairy-products manufacture, fruit and vegetable processing, jams and jellies, fish and meat products, edible fats and oils, food emulsions, processed potato products, dehydrated and freeze-dried foods, tea and coffee, spices, confections and products of milling and baking. Characteristics of packaging materials, including flexible films, and how they meet the package requirements of various foods.

44.311, 44.411 Quality Control

Responsibilities and organization of a quality-control department in the food industry. Equipping a control laboratory. Methods of measuring and controlling quality factors, such as colour, texure, flavour, and consistency in foods. Principles of statistical quality control. Federal and Provincial Government standards. Laboratory periods will provide practical experience in the scoring and grading of processed foods and in the use of various control instruments.

44.312 Introductory Food Analysis

Chemistry of the principal components of the major representative classes of foods and feeds. Moisture in foods. Proximate composition and energy values. Standard methods of analysis for common constituents. Techniques and procedures in general use in food and agricultural products laboratories.

44.324 Zoology

General classification of the animal kingdom. Basic vertebrate zoology. The development of the vertebrate from embryo to adult. The study of the vertebrate body, including the skeletal, muscular, digestive, circulatory, urogenital, and endocrine systems. Laboratories consist of comparative vertebrate anatomy.

44.332, 44.432 Food Handling and Sanitation

Food technology in quantity food preparation; new processes and products. Training employees in food sanitation practices. Maintaining high bacteriological standards during the preparation and serving of foods for public consumption. The study of undesirable micro-organisms and their possible pathogenic effects to public health. Assessing test results and preparing reports.

44.352 Genetics

Principles of genetics, including heredity and environment, Mendel's law of segregation, expression and interaction of genes, and multiple factor inheritance. Applied plant breeding and animal breeding with particular reference to British Columbia.

44.361 Plant Technology

Plant nutrition, including photosynthesis, mineral nutrition, permeability and adsorption of nutrients, water economy, translocation. Plant metabolism. The dynamics of growth and development, integration growth, physiology of reproduction, dormancy and arrested development, differentiation, plant environment.

44.363 *See* 44.263.

44.364 Nursery Crop Production

Culture and management of plant materials in a nursery. Propagation of nursery stock. Plant growing structures; cold frames and greenhouses. Field culture of nursery crops. Storage, inventory control, and marketing.

44.371 Animal Technology

A general familiarization with the live-stock and poultry industries as they relate to food production. Animal physiology. Role of basic nutrients in metabolism. Nutritive requirements of live stock during growth, reproduction, and lactation. Feed ration formulation. Feed additives.

44.401 *See* 44.301.

44.402 Process Analysis

This course is designed to acquaint the student with the more important production-engineering aspects of food manufacturing. Basic engineering principles for several food-manufacturing processes will be considered along with materials handling, plant layout and design, and principles of cost analysis. Laboratory sessions will involve experimentation, demonstration, and problem solving.

44.411 *See* 44.311.

44.412 Food Analysis

Detailed chemistry of the products of the food industry: fat and oil, sugar, cereal, fruit and vegetable, dairy, fishery, meat, and poultry products. Vitamins and nutritional supplements. Chemistry of various types of food deterioration and its prevention. Food additives—preservatives, colouring, flavouring, and sweetening agents. Physiochemical and instrumental methods used in food analysis.

44.413 Agricultural Analysis

Chemistry and standard methods of analysis of agricultural products. Determination of major and minor nutrients in feeds and fertilizers. Elemental analysis of plant materials and soils. Analysis of cereal grains and animal products. Chemistry of pesticides and fungicides. Instrumental and chromatographic procedures for determination of pesticide and other potentially hazardous residues in feeds.

44.414 Experimental Techniques

Design of experiments with crops and animals. Statistical methods, including sampling, tests of significance, regression and correlation, block diagrams, factorial experiments, split-plot, lattice designs, and transformation of experimental data. Layout of actual experiments.

44.431 Sanitation

Organization of a sanitation programme in the food industry. The chemistry of cleaning. Properties of a good detergent. Types of cleaning compounds and formulation. Methods of disinfection and sterilization. Sanitary aspects of buildings and equipment. Safe water supply. Waste treatment and disposal. Effective insect and rodent control. Employee training in sanitary practices. Inspection techniques and laboratory tests.

44.432 *See* 44.332.

44.442 Agricultural Mechanics

A study of basic engineering principles as applied to agricultural operations. Tillage and harvesting equipment. Agricultural spraying systems. Irrigation systems. Hydraulic systems. Care of equipment.

44.462 Plant Protection

A study of the destructive forces of diseases, insects, and weeds on our ornamental plants and food crops, and means of control. Cultural control. Chemical control—insecticides, fungicides, herbicides. Systems of application—dusting, spraying, concentrate spraying, operating and maintaining equipment. Measures of efficiency. Seed treatment. Turf protection. Protection of stored crops.

44.465 Landscape Field Practice

Landscape specifications, plan reading, estimating. Landscape construction, levels, grades, irrigation, drainage. Landscape materials. Seeding and sodding of grasses. Planting procedures. Cost control. Equipment operation.

44.481 Soil Technology

The origin, formation, and classification of soils, use of survey reports, map interpretation. Components of soils, soil colloids, cation exchange

reactions, soil acidity, phosphorus, nitrogen, the crop as an indicator of fertility, soil organic matter, fertilizers. Soil-sampling procedures, extraction methods used in soil analysis.

FORESTRY

45.101 Forest Science and Utilization I

Fundamental concepts related to the forest and forestry. Brief outline indicating the importance of forests and the forest industry in British Columbia. Basic structure and physiology of the seed plants with specific reference to trees. Identification of commercially important conifers. Gross structure of wood. Introduction to forest utilization. A survey of harvesting methods. The manufacture of lumber and allied products. An introduction to forest management and administration.

45.103 Forest Measurement I

Fundamental concepts of Forest Engineering—measurement of distances, direction, and elevation. Calculations relating to traverses—obtaining, recording, and plotting topographic detail. Care, maintenance and adjustment of equipment. This course will familiarize the student with forest surveying methods used in logging layout, and forest measurements.

45.106, 45.206 Photo Interpretation and Mapping I, II

Practical use and application of aerial photography in forestry. Recognition and study of landforms and forest types. Measurement of heights, stand densities, and areas. Classification of forest land and cover. Limitations to and use of photos in reconnaissance, planning, and inventory. Practice in use of pocket and mirror stereoscopes, parallax bars, planimeters, dot grids, and other interpretation aids.

Construction of forest maps and plans. Transfer of forest information to topographic and planimetric maps using stereoscopes, Sketchmasters, Map-O-Graph, Kail plotters, and pantographs. Evaluation and use of maps from various sources. Map reproduction techniques.

45.110, 45.410 Fire Control I, II

Historical review, fire behaviour with simulation through effect of topography, fuel, weather, including weather observation. Pre-suppression, including fire danger ratings, detection, reporting and general pre-organization of industrial and government agencies. *Forest Act*, Part XI. Fire-suppression techniques through fire simulation training in initial action and problem-solving.

45.201 Forest Science and Utilization II

The microscopic structure of wood. Non-mechanical and mechanical properties of wood. Identification and uses of commercial woods in British Columbia. Wood deterioration and preservation. Manufacture of plywood, laminated beams, pulp and paper, composition boards. An introduction to the reproduction of conifers and genetics. Dendrology. References to ecology, soils, plant geography, and forest regions of Canada and British Columbia.

45.202 Forest Measurement II

Methods of measurement of standing and felled timber. Direct measurement of tree diameters, heights, and ages. Characteristics and use of standard

volume tables. Construction of local volume tables. Stand and stocktables. Measurement of site index. Forest inventory and operational cruising techniques, with elementary statistical analysis. Types of sampling. Sampling design. Application of aerial sampling and point sampling. Compilation methods for sample data. Report writing.

45.206 *See* 45.106.

45.208 Natural Resource Management

A generalized study of British Columbia's natural resources and resource-based industries, aimed at broadening the forest resource technician's appreciation of other demands on forest land use. Topics included are: people, soil, water, forestry, agriculture, fisheries, wild life, recreation, mining, gas and oil, transportation, grazing, and power.

Land-use surveys, regional planning, and pollution problems are discussed within the framework of integrated resource use. Extensive use is made of qualified guest speakers from various resource spheres.

45.302, 45.402 Forest Measurement III, IV

Instruction in log scaling for Coast and Interior operations. Scaling for woods, records and inventory. Cubic- and board-foot log scales. Conversion factors and volume calculations. Field application of cruising techniques. Office compilation and cruise report preparation. Cruising for inventory and logging development. Preparation of forest maps. Familiarization with British Columbia Forest Service cruising systems. Project planning and implementation. Use of computers for mensuration data.

45.305, 45.405 Logging I, II

Description and analysis of systems most commonly used on the British Columbia Coast and Interior. Layout and construction of settings, roads, and landings. Pre-logging, salvage, and thinning. Equipment developments. Logging plans. Woods safety, logging organization, and contracts. Budgets, records, and accounting for a logging camp.

45.308, 45.408 Roads and Transportation I, II

Design of transportation plans to fit timber and terrain. Road specifications to suit production plans. Truck-road location, construction, and maintenance. Earth and rock work. Drainage, culverts, run-off control. Snow removal and winter roads. Small bridges, log dumps, booming-grounds. River improvements, rafting and barging. Road costs.

45.313, 45.413 Forest Pestology I, II

An integrated study of forest insect and disease problems in British Columbia. Basic life-history studies. The interactions of these two agencies in the forest. Improved cruise techniques through better recognition of insect and disease damage. Use of subject literature to obtain information. How to seek help from authoritative government agencies. Prevention and control of damage. Measuring and reporting of insect and disease damage. Recognition of the currently important insects and diseases.

45.316 Forest Management

Principles of sustained yield, regulation of the cut, rotation, allowable cut. Administration of Crown and private timber via timber sales, tree-farm

licences, pulp harvesting areas, farm wood-lots. Inspections and supervision. Sloan Report. *Forest Act*. Stumpage appraisal—principles, methods, and application of estimations of value of standing merchantable timber. Principles of forest valuation.

45.321 Park Management

An introductory course in Park Management. Directed primarily toward the development and recreational use of areas already designated as natural parks. A survey of the field of outdoor recreation, including a brief history and organization of those agencies providing for recreational activities in parks. Park development, planning, and design. Practical exercises in site analysis, planning, and design for specific uses. Park and natural-history interpretation. Park operation and administration.

45.322, 45.422 Wildlife Management I, II

The principles and practice of wildlife management, with particular reference to problems and procedures in British Columbia. The nature and classification of wildlife environments. The dynamics and environmental relationships of wildlife populations. Methods of study of wildlife populations. The harvesting of wildlife. The formulation and purposes of regulations. Natural and artificial regulation of animal numbers. Diseases and parasites. The economics of wildlife, particularly in forest habitats. Extensive field study to support and extend lecture and laboratory material.

45.323, 45.423 Fish Management I, II

The first part (13 weeks) will deal with the biology of fish, including anatomy, taxonomy, physiology, behaviour, and ecology. Part two (20 weeks) will be devoted to the management aspect of fisheries and will include population dynamics, habitat evaluation and improvement, harvesting, pollution, processing, and fishery regulations. Laboratories will deal with methodology as it applies to the above, and much of the training in this regard will be done in the field.

Emphasis throughout will be placed on fisheries as it applies to British Columbia.

45.324 Public Administration

This course deals with the fundamentals of Public Administration, including Government of Canada: organization; functions administration; principles of organization finance; fiscal and accounting procedures in Government departments and agencies; personnel administration; role and functions of the Civil Service Commission; supervisors and staff management; administrative law; statute interpretation; judiciary in Canada; jurisdiction and functions of administrative tribunals.

45.325 Public Information Techniques

The course objective is to introduce the student to the practical techniques of effective communication in his chosen field. The preparation, design, and use of audio, visual, and other communication media will be emphasized and encouraged in the development of all written and oral presentations. The oral presentation of topics prepared from related courses in the option, supplemented by library research and literature survey, will be required of the student in a variety of speaking practicums. The student will have continued practice in the basic communication techniques of small-group discussion, lecture, seminar, and conference, and will study the elements of parliamentary procedure.

45.402 *See* 45.302.

45.405 *See* 45.305.

45.408 *See* 45.308.

45.409 Silviculture

Introduction to elementary silvics, silvicultural principles and systems, intermediate cuttings. Natural and artificial regeneration, including site preparation, brush control, planting, seeding, and nursery practices. Planting surveys and crew supervision. Use of herbicides. Systems of cutting and effects on future growth, stand composition, and yield. Silvical characteristics of major British Columbia species. Forest soils. Forest-stand types and relations to logging planning. Introduction to genetics and ecology. Forest classification. Project planning and report writing.

45.410 *See* 45.110.

45.413 *See* 45.313.

45.421 Wildland Recreation Management

Assessment and development of wildland recreational areas outside of established parks. Recognition of recreational sites by aerial-photo interpretation of land forms, and subsequent ground reconnaissance. General and specific recreational surveys, and agencies involved. Private and public programmes in forest recreation. Land tenures and land acquisition for recreation. Recreational subdivisions. Wildland landscaping. Winter sports area developments, with emphasis on ski terrain, trail design, lifts, and tours.

Water-oriented activities, wildland access problems and trail design, mountaineering, huts and shelters, search and rescue.

45.422 *See* 45.322.

45.423 *See* 45.323.

45.426 Ecology

An introduction to the basic principles of ecology, with emphasis on their application to forest ecosystems and to the management of fish and wildlife populations. The nature and functioning of natural communities.

FOREST PRODUCTS

46.210 Introduction to Pulp and Paper

Introduction to the fundamentals of pulp and paper manufacture. The important pulping processes, major production equipment, and preparation of flowsheets; wood preparation, chemical pulping, bleaching, mechanical pulping, screening and cleaning. Fibre microscopy. Identification of the gross and minute structure of the commercially important species of British Columbia.

Introduction to process quality-control analyses; chip classification, wood density, freeness, fibre classification, consistency, moisture content, permanganate tests. Beater evaluation of pulp, sheetmaking, and physical testing.

46.212 Introduction to Wood Processing

Lumber tallying and lumber grading. Students will attend grading classes in order to write for a B.C.L.M. grading ticket. Wood seasoning, dry-kiln operation, and wood preservation. Manufacture of plywood and glued laminated structures. Building board and composition board, pulp and paper industry, integrated forest products operations, and wood supply.

Introduction to structure of wood, wood moisture and density relationships. Agencies of wood deterioration.

46.301, 46.401 Pulp and Paper Technology I, II

History of pulp and paper making. The industry in Canada and the world. World fibre sources. Wood structure and fibre morphology. Wood chemistry. Preparation of wood. Water treatment. Principles of pulping. Mechanical, semi-chemical pulping. Handling of unbleached pulp. Preparation of pulping chemicals. Chemical and heat recovery. Pulp bleaching. Preparation of bleaching chemicals. Drying and packaging of pulp. Pulp uses. Pulping by-products. Paper and paperboard manufacture. Microbiology of pulp and paper. Mill instrumentation. Materials of construction. Mill hazards and safety. Pollution abatement. Possible future developments.

46.304, 46.404 Pulp and Paper Testing I, II

Mill organization for quality control. T.A.P.P.I. and C.P.P.A. methods for raw-material testing, including wood quality tests, pulping chemicals, and bleaching-chemical analysis.

Process control and product testing; including pulp viscosity, bleachability, screening and cleaning efficiency, and dirt count, utilizing electronic test equipment. The study and application of advanced techniques in the physical, optical, and chemical evaluation of paper-pulps and manufactured papers. Projects are undertaken in conjunction with the laboratory section of the Pulp and Paper Technology course.

46.311, 46.411 Wood Properties I, II

Wood anatomy and identification of important commercial species. Preparation of microscope slides. Photomicrography. Wood growth, natural defects, and agencies of deterioration. Chemical, physical, and mechanical properties of wood. Strength tests. Wood adhesives and surface coatings.

46.314, 46,414 Wood Processing I, II

Log preparation: bucking, sorting, barking. Lumber and plywood manufacture. Chipping, wood seasoning, preservation. Fire retardants. Laminated woods. Edge and end gluing. Composition boards. Round timbers and modified wood products. Millwork.

46.401 *See* 46.301.

46.404 *See* 46.304.

46.407 Wood Chemistry

Basic organic chemistry. Chemical composition of wood. Structure of the major wood components: extractives, lignin, hemicellulose, and cellulose. Chemistry of the wood components, particularly as related to commercial pulping processes. The chemistry of cellulose derivatives.

46.411 *See* 46.311.

46.414 *See* 46.314.

46.417 Quality Control

Quality-control methods in lumber, plywood, glulam, preservation, and composition board. Lumber size control. Volume and grade recovery for sawmills and plywood mills.

46.421 Wood Products Management

Communications and human relations: requirements of a good supervisor, problems in supervision; management policies, organization and practices; job analysis and instruction, safety techniques; wages and salaries.

46.451 Mechanical and Electrical Equipment

A study of mechanical and electrical equipment relating to development, transmission, application, and control of power as applied to the wood products industries. A.c. and d.c. drives, controls, and characteristics; distribution of power systems; prime movers, speed conversion, drives and bearings; hydraulic and pneumatic systems.

NATURAL GAS AND PETROLEUM

47.221 Distribution and Utilization (Gas)

City gate stations; regulation and odourization; high, medium, and low pressure distribution systems; network analysis; services; service regulators; meters; combustion stoichiometry; furnaces, boilers; installation codes; industrial and power utilization; corrosion control; peak shaving; storage.

47.311 Gas and Oil, Production and Transmission

Petroleum geology; reservoirs; exploration; well drilling; field production and treatment; conservation; gathering and transmission systems; pipeline construction and maintenance; corrosion protection; compressor and pumping stations; flow computations; economics of design; measurement; laws and regulations.

47.431 Refining and Utilization (Oil)

Crude oil, distillation; cracking, thermal and catylitic; reforming; hydrogenation; oil products, product testing, storage, loading, combustion stoichiometry; oil and gas engines, oil burners.

47.441 *See* 47.341.

INSTRUMENTATION AND SYSTEMS

48.100, 48.200 Process Measurements

Introduction to Instrumentation Technology; instrument symbols; static characteristics; applications. Dimensional analysis applied to instrumentation.

Density Measurement.—The hydrometer, Westphal balance and bubble-tube systems.

Level Measurement.—Float, electrode, sonic, hydrostatic, and capacitance systems.

Pressure Measurement.—The manometer, Bourdon gauge, bellows, diaphragm, Pirani and ionization gauges.

Dynamic Response of Instruments.—First order systems with step and linear inputs.

Flow Measurement.—The venturi, nozzles, orifices, pitot tubes, rotameters, weirs, magnetic flow meters, turbine flow meters, volumetric flow meters.

Fluidics.—Introduction; fluid dynamics; proportional devices; digital devices.

Temperature Measurement.—Expansion thermometers, thermocouples, resistance thermometers, thermistors.

Shop Practice.—Precision machining and measurement of small items. Heat treatment, welding and soldering. Tube-bending and pipe-fitting.

48.300, 48.400 Process Measurements

This course is essentially a continuation of 48.100, 48.200.

Weight Measurement.—Units and standards, weight beams, springs, pneumatic and hydraulic load cells, strain gauges.

Humidity and Dewpoint Measurement.—Including the psychrometer and hygrometer.

Viscosity Measurement.—Rheology, falling ball, variable area, capillary, rotating cylinder, and vibrating probe methods.

Gas Analysis.—Chemical absorption, thermal conductivity, paramagnetic, heat of combustion, and polargraphic methods.

Electrolytic Conductivity.—Electrode and electrodeless methods.

pH Measurement.—Litmus, dye, electrometric, and oxygen reduction methods.

Spectrometry.—Light sources, filters, dispersive elements, and detectors.

Chromatography.—Paper and column methods.

48.310, 48.410 Process Control

History of development. Concept of the process control loop.

Final Control Elements.—Regulators and control valves, actuators, feedback concept, positioners.

Process Response.—Static and dynamic response, self-regulation, process time-constants, controllability.

Simple Controllers.—Two-position, single-speed floating and high-gain controllers, proportional control offset, speed of response.

Three-mode Control.—Proportional, reset, and rate actions in various combinations. Typical pneumatic and electronic controllers. Controller tuning and calibration.

Computer Analysis.—Process and controller analogues, special functions, typical control loop analogues, modelling and scaling.

Frequency Response Analysis.—Used mainly as an aid to understanding gain and phase-shift characteristics in a control loop.

Special Applications.—Cascade, feedforward, and ratio control. Practical process layouts.

48.320, 48.420 Computer Techniques

Basic Concepts.—Types of computer. Hybridization. Use of components in instrumentation.

ANALOGUE COMPUTERS

Passive and Active Components.—Potentiometers loading error, operational amplifiers.

Computer Functions.—Summation, integration, exponentials, multiplication, arbitrary functions, track-store, transportation lag.

Analogue Programming. — Process analogues, formula and modelling methods, scaling, repetitive operation, iteration techniques.

DIGITAL COMPUTERS

Digital Systems.—Number systems; coding systems; concept of OR, AND, NOT; gating methods.

Symbolic Logic.—Boolean equations, NOR and NAND logic, truth tables, algebraic and graphical methods of minimization.

Computer Components.—Flip flops, counters, shift registers, adders, multivibrators, memory, D/A and A/D conversion.

Digital Programming.—Computer organization, input - output systems, simple machine-language exercises.

48.330, 48.430 Instrument Techniques

A further study of physics topics as they apply to measuring instruments.

Charge.—The electric field, potential, resistance, temperature coefficient, capacitance, inductance. The magnetic field, flux, Loop torque, Faraday's law, Lenz's law.

Properties of Matter.—Dielectrics, paramagnetism, diamagnetism, ferromagnetism, oscillations. Introduction to Maxwell's equations.

Circuits.—D.c., a.c., power supplies, amplifiers, measuring circuits.

Light.—Its nature, sources, filters, optical properties of materials, reflection, diffraction, refraction, gratings and prisms, detectors.

Heat and Work.—Forms and transfer. A review of the laws of thermodynamics, temperature, kinetic theory of gases, specific heats.

Sound.—Waves in elastic media, superposition, interference, power, resonance, propagation.

48.350, 48.450 Process Instrumentation

An orientation course for students of other technologies. A comparative study of devices used to measure pressure, temperature, level, and flow. Flow sheets and symbols. Demonstration of static and dynamic responses. Applications to processing industries. Principles of process control, process reactions, and loop time-constants. Regulators, ON-OFF; proportional, reset and rate action. Multi-control loops, flow ratio and feedforward control. Applications, flow sheets, control problems. Introduction to digital techniques.

48.360, 48.460 Medical Instrumentation

An orientation course for students from biomedical technology. Basic devices for measuring pressure, temperature, density, and flow. Concept of regulation and feedback control. A study of the principles of analysis instruments, using potentiometric, amperometric, and polaragraphic techniques; ultraviolet, visible, and infra-red spectroscopy; flame photometry; paper and column chromatography; electrophoresis and refractometric methods.

48.370, 48.470 Process Instrumentation

A one-term orientation course for students of other technologies. A study of measuring devices, related to pressure, temperature, level, flow, and density. Basic concepts of feedback control, from regulators to control loops. Flow sheets, symbols, and typical applications.

MECHANICAL

49.101, 49.201 Draughting

Orthographic and isometric projection; lettering; technical sketching; sections; conventional practices; dimensioning; working drawings; intersections and developments.

49.105 Applied Mechanics

Vectors; force systems; graphical representations and solutions; analysis of practical problems involving static and dynamic loads; friction and acceleration forces; inertia; torque; work; power; introduction to hydraulics.

49.106 Applied Mechanics A

A study of applied mechanics for non-Mechanical students. Topics include statics, forces, moments, couples, frames, beams, centroids, friction, dynamics, motion in a circle.

49.150 Production Engineering

1. *Machine Tool Theory.*—Metal-cutting materials, mechanics of metal-cutting, tool geometry, single-point and multi-point cutting-tools, tool life and cutting speeds. Metal removal rates and power with experimental work to demonstrate these principles.

2. *Metrology.*—General concepts and principles of measurement. The use of standards. Graduated manual measuring-tools, dial indicators, gauges, micrometers, verniers, sine bar, etc. Surface texture measurement using mechanical-electrical systems of measurement.

49.165, 49.265 Shopwork

Practical experience in the use and application of basic metal-cutting machine tools—engine lathe, drill press, shaper, milling machine, power saw, planer, and precision grinder; layout and bench work; precision measuring; tool sharpening.

49.201 *See* 49.101.

49.206 Engineering Concepts

Study of some of the basic principles required in engineering design. Solution of problems involving mechanics and strength of materials. Practical work to be carried out by the student in the engineering materials laboratory.

49.210 Strength of Materials

Study of stresses, strains, and deflections resulting from action of tensile, compressive, shear, and torsion forces on simple types of structural and machine elements. Consideration of beams, columns, shafts, thin-walled cylinders, riveted and welded joints. Laboratory testing of engineering materials and common machine elements.

49.225 Applied Heat

Study of basic topics leading to engineering thermodynamics, including heat, energy, work; fluid properties, processes and systems, ideal gases, enthalpy and entropy; first and second laws of thermodynamics; Carnot engine and heat pump; standard air cycles; calorific values of fuels. Laboratory work will be carried out to supplement theory presented in lectures.

49.250 Production Engineering

1. *Machine Tool Theory.*—The utilization of modern machine tools for manufacturing processes. The lathe, boring mill, milling machine, shaping machine, drill press, jig borer, etc. Simple planning of operational sequences for manufacture of simple components.

2. *Metrology.*—Interferometers and associated devices, optical comparators, optical alignment of tools, the flatness of surfaces, and surface texture. The metrology of angles, screw threads, and gear teeth. Measuring-machines.

49.265 *See* 49.165.

49.266 Introduction to Machine Tools

A basic course designed to familiarize the student with shop tools and equipment and with shop terminology and established standards of workmanship. Demonstrations are carried out to provide a practical understanding of the subject.

49.267 Introduction to Machine Tools

The study of modern machine tools with practical experience in their use and application. Costs and economics related to production.

49.301 Engineering Graphics

A study of advanced draughting practices and graphical solutions to engineering problems.

49.312, 49.412 Machine Design

Basic principles of machine design, including application of fundamentals of mechanics, strength of materials, draughting techniques, and physical properties of materials toward creation of complete machines for economical production and efficient operation. Incorporation of practical experience gained in machine-shop periods into practical designs is stressed. Study of common machine elements, including beams, columns, shafts, gears, belts, pulleys, couplings, and screws, and incorporation of these into more complex assemblies.

49.314 Mechanics of Machines

Basic mechanical principles. Force and motion as applied to simple machines. Work and energy, power, efficiency. Power transmission, fluid mechanics, thermodynamics as applied to steam power and refrigeration.

Materials of construction, corrosion, maintenance, and lubrication. Electrical-power equipment. Whenever possible, food- and agricultural-industry equipment will be used in the laboratory exercises.

49.315 Fluid Mechanics

Principles of hydrostatics, including properties of fluids; pressure measurement; forces on submerged surfaces; fundamentals of fluid flow; flow through pipes, nozzles, and orifices; streamline and turbulent flow; flow measurement; dimensional analysis. Laboratory tests are performed to verify lecture theory.

49.325, 49.425 Thermal Engineering

Review of fundamentals of thermal systems. Study of steady-flow processes; thermodynamic properties of pure substances and of mixtures of liquids, vapours, and gases; energy sources and energy release; steam processes and power plants; centrifugal pumps and fans and associated systems; heat transmission, refrigeration and air-conditioning; air compressors and internal-combustion engines. Laboratory work includes investigation into fluid flow measurement, combustion of fuels, steam conditions and performance influences on machinery such as steam turbines and generators, heat exchangers, pumps, fans, refrigerators, air compressors, gas turbines and other internal-combustion engines.

49.350, 49.450 Production Engineering

Study of various elements of industrial operations, including cost estimating, product development, plant location, plant facilities, plant layout, materials handling, plant engineering and maintenance, production control, quality control, productivity, automation, low-cost automation, numerical control of equipment.

49.365, 49.465 Shopwork

Continuation of Shopwork 49.165 and 49.265 with further experience on machine tools, including boring mill, jig borer, tool and cutter grinders, turret lathe, die sinker, and punch press; use of fine measuring tools.

49.370, 49.470 Engineering and Maintenance

Fundamentals of lighting; acoustics; heating; principles of air-conditioning; passenger elevators; electrical systems; fire prevention and protection; plumbing; swimming pools.

49.412 *See* 49.312.

49.425 *See* 49.325.

49.435 Fluid Power

Study of the basic components of hydraulic and pneumatic systems and how they are combined to build up various circuits. The uses of hydraulics and pneumatics for both power transmission and control purposes are covered. Laboratory work includes experiments and tests on various types of equipment used in industry.

49.445 Manufacturing Processes

Study of modern manufacturing processes, including the machines, materials, methods, and practices used in the mechanical industries; casting; welding; hot and cold forming; extruding; forging; die casting; stamping;

and pressing. Course content is related to material covered in Engineering Materials and to training given in Shopwork 49.165 to 49.465. Field trips to appropriate local industries are arranged.

49.450 *See* 49.350.

49.455 Tool Design

Study of tool design as related to manufacturing methods and requirements; tooling for production and gauging; standard tooling components and devices; consideration of drill jigs, press tools, punches, dies, and special devices.

49.465 *See* 49.365.

49.470 *See* 49.370.

MINING

50.101, 50.201 Geology

Definition, basic concepts, earth's crust, geologic time; atomic structure of minerals, crystal forms and symmetry systems; properties of common minerals; sedimentary rock types, clastic and chemical sedimentaries; igneous rock types, classification; deformation of earth's crust, folds, faults; metamorphic rocks; weathering, erosion, and glaciation; economic geology, mineral fuels, non-metallics, ore deposits and their controls; geological history, pre-cambrian, paleozoic, mesozoic, tertiary, pleistocene; geologic maps.

50.102, 50.202 Mining

This course covers the following topics: nature of the mineral industries, brief history, classification, and principal activities; search for economic mineral deposits and elements of prospecting techniques; preliminary exploration methods; terminology of mine development; basic framework of evaluation; outline of production and treatment methods; recoverable unit value, smelter contracts, and costs of mining; evaluation, sampling methods, weighted arithmetic mean, determination of average grade, and definition of ore reserves; means of acquiring title to mineral property, the *Mineral Act;* exploitation of mineral deposits, planned systems of extraction, and classification of mining methods. In addition, as time allows, an introduction to some of the unit operations in mining, e.g., drilling and haulage.

50.201 *See* 50.101.

50.202 *See* 50.102.

50.301 Geology—Structural

Brief review of mechanical principles of rock deformation and of the primary structures of sedimentary, igneous, and metamorphic rocks. The origin, nature, and classification of joints, folds, and faults, with emphasis on their relation to mineral resources.

Laboratory work includes examination of specimens, methods of recording structural data, mapping and solution of structural problems, with emphasis on economic aspects.

50.302, 50.402 Mining—Operation and Equipment

Subjects covered are: Mining economics; total cost components; selection of equipment; utilization of equipment; break-even ratio; breaking ground;

ground support; ore- and waste-removal equipment and systems; development drives, cycles, rounds, controls; examples of mining practice; control of water, drainage, grouting; ventilation; occupational hazards; *Mines Regulation Act;* mine organization.

Laboratory sessions consist largely of field trips to mines and local suppliers of mining equipment for familiarization with mining methods, systems, and equipment. In addition, specific laboratory sessions are given on power generation and distribution and electrical equipment for mine service, pumping, ventilation, V-belt drives, dust and noise control, hoisting, and compressed-air practice.

A three-day course given by the British Columbia Department of Mines and Petroleum Resources during the spring break leads to a certificate in mine-rescue work.

50.401 Geology—Mineral Deposits

The terminology, classification, manner of occurrence, distribution, and economics of mineral resources, with emphasis on typical Canadian occurrences. Ways of recognizing, discovering, and developing mineral deposits.

Laboratory work will illustrate and develop techniques in: megascopic study and identification of hand specimens; valuation of mineral deposits.

Field trips will be correlated with all classroom work in geology.

50.402 *See* 50.302.

50.403 *See* 50.303.

50.404 *See* 50.304.

SURVEYING

51.101, 51.201 Surveying

Introduction, types of survey; fundamental principles, accuracy and precision, errors and mistakes; measurement of distance, direction and elevation, calculation of latitude and departure areas and volumes; horizontal and vertical curves; use of plane tables, levels, compasses, theodolites, chains, and calculating machines; note-keeping and plotting of records; care, maintenance, and adjustments of equipment.

51.102, 51.202 Surveying

Fundamental concepts of surveying: measurement of distances, use of compasses, theodolites, plane tables, levels and chains, site surveys. Calculations relating to traverses, triangulations, areas, and volumes: obtaining, recording, and plotting topographic detail. Care, maintenance and adjustment of equipment.

51.104 Introduction to Survey for Natural Gas and Petroleum Technology Students

Introduction to the theory of engineering survey; practical application of linear measurements; introduction to and theory of the theodolite; bearings and traverse computations; introduction to and theory of levelling; computation of areas and volume.

51.201 *See* 51.101.

51.202 *See* 51.102.

51.203 Natural Science

Study of the forest flora of British Columbia; biotic zones, their boundaries, altitude, climate, and natural flora; the characteristics of native trees, identifying features and common uses. Elementary geology, including the study of rocks and minerals; geologic structures, general location and uses of common ores; soil classification and location.

51.204 *Introduction to Survey for Building Students*

Introduction to engineering survey; linear distance; introduction to the theory and use of the theodolite; direction, bearings, and angles; use of traverses in site engineering, areas and volumes; elevations, use and theory of the level; use of the plane table; simple circular curves.

51.301, 51.401 Plane Surveying II

Generally deals with surveys which do not have to account for curvature of the earth.

Analysis of methods and instrumental errors, use of specialized equipment. Application of survey methods to engineering surveys, hydrographic surveys, mining surveys, legal surveys, and higher-order surveys.

Engineering surveys to include topographic surveys by various methods, setting out work for construction and sewers, etc. Highway design and layout involving vertical curves, horizontal curves, transition curves and terminal curves, railway grades, and transition curves.

Hydrographic surveys to include tides, shoreline surveys (large and small), sounding methods, and reduction and plotting soundings.

Mining surveys to include special equipment, underground surveys, surface surveys, and mineral claims.

Legal surveys to include survey acts, survey marks, types of surveys, re-establishment of section and lot corners, subdivision of land.

Right-of-way surveys; methods for city work, rural work, and town planning.

Higher-order surveys to include optical tooling and jigs, automatic plummets, first-order levels and first-order baselines.

51.302, 51.402 Geodetic Surveying II

Generally deals with surveys which take into account curvature of the earth, and in conjunction with 51.303, 51.403 covers related mathematics, theory of error, convergency, geographic co-ordinate system, map projections, polyconic to geographic co-ordinates, measurements in geographic co-ordinates, vertical control, triangulation and trilateration, adjustment of triangles, quadrilaterals, level circuits, etc., strength of figure, heights of towers, and other miscellaneous problems.

51.303, 51.403 Computations II, A and B

This course is run in conjunction with 51.301, 51.401 and 51.302, 51.402, and is divided into two parts, A and B.

Part A is computations pertaining to plane surveying and includes missing parts, areas, volumes, reduction of electronic measurements, vertical curves, spirals, terminal curves, laying out and dividing problems, etc.

Part B is computations pertaining to geodetic surveying and includes spherical excess, curvature and refraction, heights of towers and reciprocal slope angles, convergence of meridians, geodetic and geographic co-ordinates, reliability of observations and weighting, reduction to sea-level, three-point problems, reduction to centre, and balancing networks.

Both these parts involve some use of electronic machines and programmed computers.

51.304, 51.404 Field Surveying II

Deals with the field methods used in conjunction with plane and geodetic surveying and is done in conjunction with these subjects; 51.304 consists mainly with the students learning how to use the different instruments, and 51.404 mainly with practical projects making use of these. Specialized instruments used include 1" transit, subtense bar, sextant, RDS type, RDH, geodimeter, tellurometer, mining transit, gyro theodolite, precise levels, etc.

Projects are aimed at engineering hydrographic, mining, legal, and precise surveys and include some triangulation and trilateration work.

51.305 Draughting

Application of draughting fundamentals to preparation of plans for, preliminary plans, construction plans, "as built" plans, subdivision plans, highway and other right-of-way plans, posting plans, and plans and field-notes under the *Land Act* and *Mineral Act* in accordance with the General Survey Instructions to British Columbia Land Surveyors issued by the Surveyor-General of British Columbia.

51.306, 51.406 Astronomy

Introduction to practical astronomy; spherical trigonometry; the celestial sphere; the astronomical triangle; universal time, mean solar time, sidereal time; the ephemeris and star almanacs; instruments used in solar and stellar observations; star identification; observations for latitude; observations for time and longitude; observations for azimuth.

51.307, 51.407 Photogrammetry

Introduction to photogrammetry; horizontal photographs, aerial photographs; cameras; flight planning for vertical photography; determination of scale; mapping from aerial photos; mosaics, use and method of construction; principle of stereo-vision; determination of heights from aerial photos; photo interpretation; route reconnaissance; radial-line plotting; oblique photos; plotting machines.

51.308 Description for Deeds

Purpose and characteristics of descriptions; systems of survey, township system and district lot system, the preamble; the correct use of the words "more or less"; the importance of a good "point of commencement"; descriptions by adjoiners, description by aliquot parts, descriptions by metes and bounds, descriptions by exceptions, descriptions of rights-of-way by means of centre line; plans to accompany descriptions; Land Registry Office procedure; descriptions pertaining to Acts of the Legislature.

51.309, 51.409 Surveying for Civil and Structural Technology

Application of survey methods to construction surveys, topographic surveys; triangulation; base-line measurement, use of electronic measuring

devices; route surveys, including preliminary profile and cross-sections, calculation of quantities and volumes, and plan preparation; site surveys, including horizontal and vertical control; bench-mark levelling and adjusting of nets; calculation of areas, volumes, closure, circular curves, transitional curves, and vertical curves; elementary photogrammetry applied to planning, site surveys, route surveys, grades, and quantities.

51.310, 51.410 Surveying for Mining Technology (Mining Option)

Application of survey methods to underground surveying; definitions of mining terms; illumination of stations; use of mining transits, auxiliary telescopes; connecting surface and underground surveys, transferring azimuth to underground surveys, transferring elevations to underground surveys; location of property boundaries underground; location of tunnels, control and alignment, determining quantities; note-keeping, plotting, and construction of plans and sections related to mining, computation of closures, areas, and volumes; elementary astronomy, derivation of meridian; elementary photogrammetry applied to mining.

51.311, 51.411 Surveying (Photogrammetry Option)

Control surveys by triangulation, trilateration, and traversing; indirect optical distance measurement; electro-magnetic distance measurements; the gyro-theodolite; position fixing by means of terrestrial navigational devices; trigonometrical and barometric levelling; survey adjustments; national survey systems.

51.313 Draughting (Photogrammetry Option)

Lettering and scales, diagrams; grids and graticules; symbolization (national map series); scribing; type patching; surround detail; topographical cartography; draughting materials and specifications; star charts on the stereographic projection; control point field sketches.

51.317, 51.417 Photogrammetry

The geometry and physical nature of the photograph; the survey camera and auxiliary air-borne equipment; mapping from single photographs; radial line triangulation and plotting; stereoscopy and height determination from parallax bar measurements; stereoplotters and their operation; mono and stereo comparators; aerial triangulation; the provision of ground control; field completion; mapping from oblique photographs; terrestrial and close-up photogrammetry; engineering applications of photogrammetry; air-photo interpretation; the organization of photogrammetric operations; the history of photogrammetry.

51.401 *See* 51.301.

51.402 *See* 51.302.

51.403 *See* 51.303.

51.404 *See* 51.304.

51.406 *See* 51.306.

51.407 *See* 51.307.

51.409 *See* 51.309.

51.410 *See* 51.310.

51.411 *See* 51.311.

51.417 *See* 51.317.

MEDICAL LABORATORY

70.101, 70.201 Medical Laboratory Orientation

An introduction to procedures and principles in the operation of precision instruments and equipment used in the clinical laboratory.

70.102 Instrumentation in Clinical Chemistry

This course, designed primarily for the medical laboratory technologist, emphasizes the application of the following instruments: photometers and colorimeters, flame photometers, auto-analysers, fluorometers, etc. The use, care, and calibration of the instruments used in the clinical chemistry laboratory is taught, using biological specimens to demonstrate techniques involved.

70.103, 70.203 Hæmatology

The study of the composition of blood and blood-forming tissues, with emphasis on the cellular constituents and coagulation mechanism, both normal and abnormal.

70.104 Histology

The morphology of human cells, tissues, and organs. Emphasis is placed on the preparation of tissues for microscopic examinations: methods of fixation, embedding, sectioning, staining, and mounting.

70.105, 70.205 Medical Microbiology and Parasitology

A detailed study of the classification, morphological identification, and physiology of bacteria, fungi, viruses, and parasites, with emphasis on the human pathogens and their relationship to disease. Laboratory preparation of specimens and media, sterilization techniques, culturing methods, and serological characteristics of micro-organisms.

70.106 Biochemistry and Physiology for Medical Laboratory Technologists

This course is concerned with specific physiological, anatomical, and biochemical processes of interest to the medical laboratory technologist. Particular reference is made to structure and the metabolic and hormonal functions of the urinary, gastro-intestinal, cardiovascular, and respiratory systems.

70.107 Blood Banking

The theories of antigen-antibody reactions, with detailed study of important blood-group systems encountered in cross-matching; methods of collection, storage, and precautions employed in blood-transfusion services.

70.201 *See* 70.101.

70.202 Clinical Chemistry

This course for medical laboratory technologists is designed to enable them to become familiar with the various tests and methods of assaying biological specimens. Emphasis is placed on the chemical principles of the tests and on the practical aspects and sources of error.

The chemical analyses of serum, plasma, whole blood, C.S.F., urine, and fæces, using various methods (including automation) for all tests performed in a modern clinical chemistry laboratory.

70.203 *See* 70.103.

70.205 *See* 70.105.

MEDICAL RADIOGRAPHY

72.101 Introduction to Radiography

This course includes studies of the basic exposure factors, the technical terminology of radiography, and the significance of X-ray quality.

72.102 Apparatus and Image Recording

This course introduces the student to the photographic aspects of radiography and the technical terms used. The fundamentals of image recording and processing are included. Accessory radiographic equipment, such as grids, cones, and filters, is covered.

72.103 Anatomy and Physiology for Radiographers

This course covers the details of human anatomy as they apply particularly to the theory and practice of medical radiography. Elementary physiology of all body structures is studied. Structures of the body are studied with reference to surface markings and with the aid of radiographs.

72.104 Orientation in Medical Radiography (Hospital)

The student spends this time in the X-ray department of one of the affiliated hospitals. The student is made familiar with the day-to-day operation of X-ray departments, and the technician's role in this operation. In addition, familiarization tours are made of the various departments within the hospital. The student is permitted to assist, within the limits of his capabilities, in the routine procedures of the X-ray department. This gives the student an opportunity to apply the principles taught in the classroom.

72.105, 72.205 Radiobiology and Protection

A study is made of ionizing radiation and its biological effect. Local, systemic, and genetic effects are considered. Also studied is the significance of maximum permissible exposures, the extent of radiation hazards, radiation monitoring, and the means of protection. Emphasis is placed on the hazards and situations encountered in Medical Radiography.

72.106, 72.206 Clinical Experience in Medical Radiography (Hospital)

This course runs concurrently with 72.301 and 72.401. The student acquires a broad knowledge of medical radiographic techniques by applying classroom and laboratory training in actual clinical situations in affiliated hospitals.

72.107 Pathology for Medical Radiographers

This course provides a basic knowledge of common pathological conditions. A study is made of the effect of such pathology upon the technical factors used in radiography.

72.201 Basic Medical Radiography

This course is concerned with the conditions influencing the choice of exposure factors. Patient positioning is studied. The student is made aware of hospital organization, levels of responsibility, and the operation of other hospital services. The administrative procedures common to X-ray departments are considered.

72.202 Apparatus and Image Recording

This course covers the various rectification circuits and X-ray tubes. Intensifying screens and the various image-processing systems are studied.

72.205 *See* 72.105.

72.206 *See* 72.106.

72.301, 72.401 Medical Radiography

This course, given concurrently with 72.106 and 72.206, covers in detail routine, special, operating-room, and mobile radiographic techniques. The use of contrast media is included.

72.302, 72.402 Apparatus and Image Recording

A detailed study is made of the theory and operation of the X-ray machinery, auxiliary apparatus, and special-purpose equipment. Image-recording cameras and other recording media are studied in depth.

72.401 *See* 72.301.

72.402 *See* 72.302.

NUCLEAR MEDICINE

74.101 Introduction to Radiation Safety

This course provides a basic knowledge of the biological effects of radiation and the hazards connected with the ingestion or inhalation of radioactive material. Contamination and its prevention are considered. The procurement, storage, shielding, handling, monitoring, and disposal of radionuclides in accordance with national regulations are studied.

74.102, 74.202 Radiobiology and Protection

A detailed study is made of ionizing radiation and its biological effect. Local, systematic, and genetic effects are considered. Also studied is the significance of maximum permissable exposures, the extent of radiation hazards, radiation monitoring, and the means of protection. The basic principles of radiation therapy are considered. The emphasis is on protection problems associated with nuclear medicine.

74.103 Measurement Techniques in the Nuclear Medicine Laboratory

This course is conducted entirely in the Nuclear Medicine Laboratory. It is designed to give the student actual experience in the use of the various radiation-measuring devices in common use. Practice is gained in the use of ionization chambers, Geiger-Mueller counters, proportional counters, scintillation counters, and scanning equipment.

74.104, 74.204 Applied Physiology in Diagnosis and Therapy

This course covers the in-vivo and in-vitro use of radioactive tracer materials. A detailed study is made of the physiological criteria, the radiopharmaceuticals, and the techniques and equipment used in the study of—the thyroid gland, blood volume, iron metabolism, red-cell survival, circulation, malabsorption syndromes, the renal system, the hepatic system, the pancreas, the spleen, the lungs, and the nervous and skeletal systems. Other aspects covered are—radioimmunoassay, activation analysis, and recent advances in the nuclear medicine field.

In a well-equipped laboratory, every effort is made to realistically simulate procedures related to the above studies. This provides individual student participation and experience.

A detailed study is made of scintiscanning procedures and problems. Thorough use is made of the rectilinear scanner and suitable phantoms.

74.105, 74.205 Clinical Experience in Diagnostic and Therapeutic Isotope Procedures

This course runs concurrently with 74.104 and 74.204. The student acquires a broad knowledge of nuclear medicine techniques by applying classroom and laboratory training in actual clinical situations in affiliated hospitals and clinics.

74.106, 74.206 Pathology for Nuclear Medicine Technologists

This course provides the student with a basic knowledge of human disease and the associated terminology. The causes of disease are studied. Emphasis is placed on those conditions likely to be encountered by the student in his role as a nuclear medicine technologist.

74.202 *See* 74.102.

74.204 *See* 74.104.

74.205 *See* 74.105.

74.206 *See* 74.106.

NURSING

76.001 Fundamentals of Patient Care for Radiographers

This course covers basic skills and techniques which will assist the student to function effectively in the clinical area. The emphasis will be upon the patient and his health problem. The student is made aware of the patient as an individual and the importance of observation and communication. The student is introduced to factors which influence patient care in the hospital environment and measures used in giving assistance in emergency situations.

76.002 Fundamentals of Patient Care for Nuclear Medicine Technologists

This course will focus on the patient and his health problems. The student will gain some understanding of the functions of a hospital and methods employed to provide safety and comfort. Skills in observation, communication, and methods whereby the student can assist in unusual situations will be discussed.

76.003 Basic Principles of Patient Care for Biomedical Electronics Technologists.

This course covers basic skills which will assist the student to function effectively in the clinical area. The student is introduced to factors which influence patient care in the hospital environment. Methods whereby the student can assist the patient in the clinical setting will be discussed.

76.004 Basic Principles of Patient Care for Respiratory Technologists

This course introduces the student to the patient, his health problem, and measures used in the hospital environment to provide care. The student will gain some understanding of the patterns of respiratory disease and the role of the health team members. Basic skills in the observation, communication, and methods whereby the student can assist the patient in the clinical area will be discussed.

76.101 Physiological Chemistry

This course is designed to introduce the student to the chemistry of major physiological processes in the body. It includes basic theory and an introduction to organic chemistry and biochemistry.

76.102 Introduction to Nursing

This course provides the nursing students with introductory scientific principles designed to help acquire a beginning understanding of the basic communicative and motor skills which nursing utilizes. A problem-solving approach toward assisting patients to meet their basic needs is introduced.

76.103 Introductory Clinical Experience in Nursing

The clinical experience taken concurrently with 76.102 includes surgical and medical nursing associated with less-complicated pathological conditions.

76.104, 76.204 Pharmacology

The broad objectives of these courses are to provide the nursing student with a basic knowledge of the various medications and medicinal agents which are used in the care of patients. The computation of dosages is also included.

76.105, 76.205 Pathology and Pathophysiology

The subject includes the basic divisions of pathology and pathophysiology of common disorders. Instruction is closely correlated with the courses in normal physiology, basic nursing, and clinical experience.

76.106, 76.206, 76.306 Interpersonal Relations in Nursing

This course covers the interpersonal aspects of nursing, with emphasis on developing observation and communication skills. Group discussions based on the students' own experience with patients are conducted. The emphasis is upon normal and adaptive behaviour.

76.107 Physiology for Nursing

A course designed to provide an in-depth understanding of normal human physiology which is applied in understanding and providing nursing care.

76.108 Basic Nursing

The student is introduced to the problems which comprise the broad basis of medical-surgical nursing. The study of pathophysiology, pharmacology, diet therapy, and clinical experience is built around this base.

76.109 Clinical Experience in Basic Nursing

The clinical experience, taken concurrently with 76.108, includes operating-room and surgical and medical nursing, associated with the less-complicated pathological conditions.

76.110 Medical-Surgical Nursing

This course provides the student with an opportunity to use problems solving techniques in the solution of nursing-problem experiences in 76.111.

76.111 Clinical Experience in Medical-Surgical Nursing

This course is essentially concentrated clinical experience, when the student is provided with the opportunity to increase skill and applications of knowledge to nursing in the clinical area.

76.112 Advanced Nursing—Acute

This course is designed to give the student experience in solving the more-complicated nursing problems involved with intensive-care nursing, coronary-care nursing, and acute surgical nursing.

76.113 Clinical Experience in Advanced Nursing—Acute

Taken concurrently with 76.112, this clinical course provides the student with the opportunity to practise specific skills and apply knowledge gained in the classroom to selected situations in the hospital.

76.114 Professional Nursing

This course is designed to orient the nursing student to the evaluation of nursing, past, present, and future. Nursing is related to sociological trends and emphasis is placed upon educational patterns and nursing practices.

76.115 Mental Health Nursing

The course introduces the student to the field of psychiatric nursing. Emphasis is placed on communications and interpersonal skills as they are related to patients exhibiting the more maladaptive forms of behaviour.

76.116 Clinical Experience in Mental Health Nursing

Clinical experience, taken concurrently with 76.115, provides opportunities for the student to work with psychiatric-treatment teams in promoting the interpersonal and social adjustment of phychiatric patients in active-treatment hospitals and selected community agencies.

76.117 Advanced Nursing—Long Term

This course is designed to give the student experience in solving the problems frequently encountered in long-term illness. Emphasis is placed upon the use of community resources and rehabilitative concepts.

76.118 Clinical Experience in Advanced Nursing—Long Term

Taken concurrently with 76.117, this clinical course provides the students with the opportunity to develop attitudes, skills, and to apply knowledge generally associated with long-term illness. Experiences are gained in a variety of clinical areas in the community.

76.119 Family Care Nursing

The course orients the student to the needs of the family during the maternity cycle as these needs are related to the normal physiological changes that occur. The pathology of the ante-, intra-, and post-partum periods is studied. Common childhood ailments are considered. The problem-solving method is used in identifying the family's needs.

76.120 *Clinical Experience in Family Care Nursing*

Clinical experience, taken concurrently with 76.119, provides the student with the opportunity to become increasingly involved in identifying and meeting the family's needs. Learning opportunities involving increased depth in application of communicative and motor skills are provided.

76.121, 76.122 Clinical Experience in Advanced Nursing Problems and Advanced Nursing Problems.

These courses are designed to provide additional theory and clinical practice in a variety of areas with emphasis upon in-depth application of knowledge to selected nursing problems.

76.204 *See* 76.104.

76.205 *See* 76.105.

76.206 *See* 76.106.

76.306 *See* 76.106.

BIOMEDICAL ELECTRONICS

78.101 Introduction to Biomedical Electronics

This laboratory and demonstration course, taken concurrently with courses in the life sciences, basic electrical theory, and mathematics, introduces the student to the instrumentation associated with the electronic recording of biological signals.

78.102, 78.202 Biomedical Electronics

A study of electronic and special instrumentation used in the health sciences. Emphasis is placed on laboratory work at the Institute.

78.103 Biomedical Electronics for Electroneurophysiology Students

This course, part of which is common to 78.102 and 78.202, includes a study of electronic and other instrumentation used in biology and medicine, but with an emphasis on equipment used to study and treat conditions of the brain and nervous system.

78.104 Electroneurophysiology

To be developed.

78.105 Clinical Experience in Biomedical Electronics

Demonstrations and field investigations are carried out concurrently with 78.202 by arrangement with local hospitals and other health agencies.

78.106 Clinical Experience in Electroneurophysiology

Related clinical experience taken in local hospitals and health agencies.

78.202 *See* 78.102.

HEALTH DATA

80.101 Introduction to Health Record Science

This course introduces the student to the principles underlying health record science. Special areas of consideration include orientation to the health care field, hospital organization, and the history and nature of health records.

80.102, 80.202 Medical and Surgical Transcription

Emphasis in this course will be on practice in the transcription of medical and surgical reports from a variety of dictation sources.

80.103, 80.203 Health Statistics

This course examines the collection, arrangement, analysis, and presentation of health statistics. Special areas of consideration will include health patterns in the community, birth and death rates, and disease and accident trends.

80.104, 80.204 Pathology for Health Data Technologists

A study of the etiology and pathogenesis of diseases of the body and mind to enable the technologist to handle with ease those areas of work which require such knowledge.

80.105, 80.205 Clinical Experience for Health Data Technologists

The objective of this course is to provide practical experience in hospitals, clinics, and other related departments, under the supervision of a faculty member.

80.201, 80.301, 80.401 Health Record Science

A detailed study of numbering and filing systems, coding methods, indexing, medical terminology, intepretation of health-data reports, health-insurance schemes, procedural supervision, and the medico-legal aspects of health records.

80.202 *See* 80.102.

80.203 *See* 80.103.

80.204 *See* 80.104.

80.205 *See* 80.105.

80.301 *See* 80.201.

80.302 Radiological and Pathological Transcription

This course is a continuation of medical and surgical transcription. It emphasizes the transcription of radiological and pathological reports.

80.401 *See* 80.201.

PUBLIC HEALTH AND POLLUTION CONTROL

82.101, 82.201 Food Sanitation

A course for public health technologists in the sanitary practices and inspection techniques associated with the production, processing, and distribution of food. Visits are made to appropriate food-handling facilities.

82.102, 82.202 Environmental Health and Engineering

This course is designed to provide the basic technical knowledge and methods of measuring and assessing the engineering aspects of the human environment. Parallel with this, the effects of environmental hazards and stresses are studied in order that their effects on the human organism may be assessed. Emphasis is placed on the study of water supplies; sewage and refuse disposal; air, water, and soil pollution; and pest and rodent control at the domestic, municipal, and community levels. In addition, special consideration is given to the measurement, chemistry, and microbiology appertaining to the above subject-areas. Further topics will include recreational facilities, occupational hygiene community planning and safety, effects and hazards of radiation, plumbing, housing, and other related subjects.

82.103, 82.203 Public Health Administration

The objective of the course is to provide an understanding of the function and administrative set up of local, Provincial, and Federal governments, so that the public health technologist may work effectively with these agencies.

Special areas of consideration include the organization of health services and related government structures, communications, health education, departmental managerial practices, and the development and evaluation of the community health programmes.

82.104, 82.204 Human Relations and Personnel Administration

These courses examine the forces which underlie social behaviour in groups, large organizations, and communities. Their objective is to show how the public health technologist may use these forces for his work within the community, and his interpersonal relations in the work-setting.

82.105 Communicable Disease Control

This course is designed to provide the student with a sound knowledge of the natural history, spread, and control of communicable diseases. Emphasis is placed on specific diseases of provincial and national importance and epidemiological methodology.

82.201 *See* 82.101.

82.202 *See* 82.102.

82.203 *See* 82.103.

82.204 *See* 82.104.

RESPIRATORY TECHNOLOGY

84.101, 84.201 Equipment and Maintenance

This course deals with the principles of instrumentation, applied to the measurement and control of those quantities, such as temperature and pressure, met with in Respiratory Technology. A regular and progressive introduction is made to many pieces of respiratory equipment. Basic workshop theory is also discussed.

84.102, 84.202 Clinical Experience in Respiratory Technology

Supervised work and instruction in local hospital departments of inhalation therapy provide students with necessary practical experience and contact with patients. A series of lectures in specialist subjects, co-ordinated by a clinical instructor, is also included.

84.201 *See* 84.101.

84.202 *See* 84.102.

BASIC HEALTH SCIENCES

98.101, 98.201 Human Anatomy and Physiology

In the first term, this service course is a brief survey of basic human anatomy and physiology. The second term is devoted to a more detailed perusal, with the emphasis on physiology. Whenever possible, this second-term material is oriented toward particular programme requirements.

98.102, 98.202 Physiology for Biomedical Electronics Students

A review of human physiology, with emphasis on the cardiovascular, nervous, respiratory, muscular, and urinary systems.

98.103 Anatomy and Physiology of the Respiratory System

A one-term course, in which emphasis is placed on the mechanics of external respiration, diffusion and transport of gases, and regulatory mechanisms. Prerequisites for this course are courses 98.101 and 98.201 (or equivalent).

98.121, 98.221 Introduction to Behavioural Sciences

This course is designed to give the student in Health Technology an awareness of the psychological, social-psychological, and sociological factors which influence health in our complex, changing society. Emphasis will be placed on the individual as a member of the family, the health team, and the social system.

98.122, 98.222 Human Growth and Development

The course provides information on the normal process of growth and development from conception to senescence. Physical and motor, adaptive, emotional, language, and social development are viewed longitudinally. Various development theories will be presented for discussion. Problems associated with the adolescent and senescent stage of development are included.

98.141, 98.241 Basic Medical Microbiology and Epidemiology

A course designed for students who are having their first experience with the world of microbes, which includes bacteria, viruses, protozoa, fungi, and rickettsiæ.

The student will acquire an understanding of the structure and activities of the micro-organisms, their reservoirs in nature, their pathways to the human host, and the many ways of recognizing, identifying, and combating them.

98.142, 98.242 Microbiology for Public Health and Pollution Control Technologists

Microbiology is an integral part of the work of a Public Health and Pollution Control Technologist. This course is designed to introduce the student to those areas of microbiology which the student will use in his daily work.

The areas to be covered are: structures and physiological characteristics of bacteria, viruses, and fungi, their mode of initiating infection, the mode by which they are transmitted, and their significance in water, food, and sewage, including their participation in the treatment processes of sewage.

Practical experience will be obtained in the various detection and enumeration techniques.

98.143 Introductory Principles of Immunology

A basic course designed to give a student encountering immunology for the first time a general background in the broad field of immunology.

The course deals with the body defences in disease; types of immunity; biologicals used; nature and function of antigens and antibodies; mechanics of antigen-antibody reactions; hypersensitivity and allergy; and tissue transplantation.

98.201 *See* 98.101.

98.202 *See* 98.102.

98.221 *See* 98.121.

98.222 *See* 98.122.

98.241 *See* 98.141.

98.242 *See* 98.142.

Printed by A. SUTTON, Printer to the Queen's Most Excellent Majesty
in right of the Province of British Columbia.
1970